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CONTENTS.

Editorial Summary.
Berlin Dwelling-houses.
Problems of Concentrated Residence.
The Theory of the Mouldings.
Old Colonial Work of Virginia and Maryland.—V.
Communications.
Notes and Clippings.
Trade Surveys.

ILLUSTRATIONS.

Shirley.
(Gelatine Print issued only with Imperial Edition.)
Competitive Designs for the Cathedral of St. John the Divine, New York, N. Y.
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CONTENTS.

SUMMARY: —

Death of Mr. John C. Mead, Architect. — The Consolidation Convention. — The cost of a Tower suggested for the New York Exhibition. — Major Powell's Investigation of the Question of Irrigation in the West. — The Vacation of Vermont Farming Lands. — The Revival of Murano Glass-blowing. — Dr. Salviati's Work. — A new Railway to India. 153

BERLIN DWELLING-HOUSES. 155

THE PROBLEMS OF CONCENTRATED RESIDENCE. 156

ILLUSTRATIONS: —

Shirley. — Competitive Design for the Cathedral of St. John the Divine, New York, N. Y. Messrs. Carrere & Hastings, Architects. — Competitive Design for the Cathedral of St. John the Divine, New York, N. Y. Mr. T. P. Chandler, Architect — Competitive Design for the Cathedral of St. John the Divine, New York, N. Y. Mr. W. S. Fraser, Architect. 159

THE THEORY OF THE MOULDINGS. 159

OLD COLONIAL WORK OF VIRGINIA AND MARYLAND. — V. . . . 161

COMMUNICATIONS: —

The Philosophy of the Attempt on Central Park. — The Richardson Biography. 163

NOTES AND CLIPPINGS. 164

TRADE SURVEYS. 164

MR. JOHN C. MEAD, a very well-known architect and builder of Hartford, Conn., died there last week. Although Mr. Mead was primarily a builder, and executed a large number of important contracts, he was, like so many of the race of New England builders, a good deal of an architect also, liking to design for himself the buildings which he erected, and employing clever and well-trained draughtsmen to help give his work the character which he desired to see in it. Like so many, also, of the New England contractors, he was thoroughly honest and reliable, doing in the best way whatever he undertook, and endeavoring to justify the confidence which was placed in him, and he will be greatly regretted by those whose regard he had earned during his long residence in the State.

THE Joint Convention of the American Institute of Architects and the Western Association of Architects is to be held in Cincinnati, on Wednesday, November 20, at 10 A. M. According to the programme "the Annual Reports to and of each organization will be read, and the Constitution and By-laws, recommended to the reorganized Institute by the Joint Committee on Consolidation, will be submitted for the final action necessary to consummate unification"; and this will be followed by the reading and discussion of professional papers. In the intervals of business, visits will be made to the more interesting buildings of the city, and an exhibition of Architectural drawings will be held. As the notice is only preliminary, it may be that more satisfactory particulars will be given later, but to the ordinary mind it seems that the space given to the main business of the meeting, the most important business that has ever come before any professional body, is a very small one. Every one who has attended such conventions knows how long and tedious the chapter and committee reports are, and we are apparently expected to listen to a double dose of them on this occasion. Judging from past experience of one of the two great bodies, the reading of the reports addressed to its convention alone occupies a large portion of the working part of a day, and if this is to be multiplied by two, there will hardly be time enough left to do more than pass a vote, accepting the Constitution proposed by the Consolidation Committee, without change, or even discussion.

HOWEVER commendable such docility on the part of the Convention might be, it is much to be hoped that it is not to be brought by force to the display of so much virtue. The policy of the consolidated Institute, one of the largest bodies of professional men in the world, will affect, perhaps vitally, the prosperity and happiness of every member of it for many years, and the freest opportunity should be given for consideration of the all-important matter of a proper start. There have been plenty of indications, before now, that the members of the old Institute had little taste for the policy of presenting them, at their conventions, with official measures, which they were expected to ratify without question, and we do not believe that the new Institute will be any more tractable than the old one. The real purpose of the next Convention is not to hear perfunctory reports, or to listen to papers on the relation of the Beautiful to the Mathematical, but to make a fresh start, with the help of all the light that the united experience of a large number of architects can throw on the subject, in the task of making the practice of architecture more honorable, more satisfactory and more profitable, to those who exercise that profession, than it is now. The old Institute did not accomplish wonders in that direction, although it did something. The Western Association attempted admirable things, and made good progress toward success, but its position, as representing a section, made its energy less effective than it would have been in a united body; and if the reorganized Institute cannot be more efficient than either of the old ones, its life will be a short one.

ONE of the reasons why the Columbus Exhibition should be held in New York is said to be that arrangements have been made in the city to build an iron tower twelve hundred feet high out of iron pipe made in Ohio. Why it should not be just as easy to build a tower of Ohio materials in Chicago as in New York does not appear, and it would probably be quite as easy to raise the money for it in the West as in New York. However that may be, the plans for the structure are said to have been prepared by the superintendent of the iron tube-works at Findlay, Ohio, and to be now under examination by experts. The most singular thing about the whole affair is its enormous cost. The Eiffel tower, if we recollect rightly, cost, complete, about three hundred and fifty thousand dollars, while the steam-pipe affair, only one-fifth higher, is expected to cost two millions. Even the immense difference in the cost of iron in the two countries will not explain this disproportion, and one is forced to the conclusion that the Ohio plan has either been studied without very close attention to economy, or that steam-pipes are costly materials for such a structure. There would be a good deal of interest in a tower on the high ridge in the middle of the city, where it is proposed to erect the exhibition buildings, if they are erected in New York at all. A tower fifteen hundred feet high, after the Eiffel model, would not be beyond the capacity of our engineers, and from such a tower one could probably see into four States, and look directly down upon a population nearly equal to that of London.

MAJOR POWELL'S great scheme for reclaiming, by irrigation, a vast tract of land in the United States, now unproductive, seems to be making progress. Surveys are going on quietly, and a Congressional Committee has been over the ground gathering information, which will form the basis of a report to the next Congress. Speaking roughly, Major Powell expects to render about a hundred million acres of land productive which now produce nothing, on account of the summer droughts, which render what is naturally a soft, rich loam almost totally barren. As compared with the two thousand million acres of land included within the territory of the United States, a hundred million seems hardly worth going to much trouble about; but we must remember that seven-eighths of our country is still unimproved, and most of it almost incapable of improvement, and that the addition of a hundred million acres of regularly-irrigated farming land would increase by at least one-half the agricultural resources of the republic. Major Powell includes in his plan a scheme for draining Chicago southward, which affords some interesting thoughts in connection with an irrigation project. It becomes more evident every year that the fortunate days of agriculture in this country are nearly over. A hundred and fifty years ago, the virgin fields of Ohio and Western New York produced forty bushels of wheat to the acre, with little cultivation, to the great astonishment of the English farmers. Now, the same fields are nearly barren, and even with the fresh soil of Nebraska and Dakota, the average yield of wheat in the United States is barely twelve

bushels to the acre, while the average yield to the acre on English farms is thirty-six bushels. Of course, the secret of the comparative poverty of American soils is want of feeding, and, as experience at the South has shown, the necessary feeding, with our sparse population, is so costly that it is cheaper to take up a virgin tract in Dakota or Manitoba than to apply fertilizers to the soil at home in Ohio or Virginia. Just now, the edge of the comparatively exhausted district is approaching pretty close to the Mississippi valley. If Major Powell can invent a scheme by which the Chicago sewage, containing, as is calculated, more than a million dollars' worth of fertilizers a year, can be applied successfully and cheaply to restoring the prosperity of Iowa and Missouri, he will deserve well of his fellow-citizens.

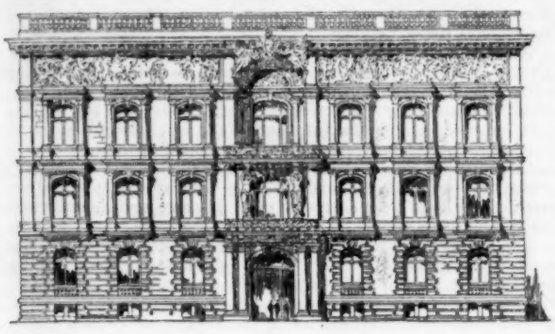
A RATHER sad story is told by Mr. Valentine, a Vermont official, about the desertion of that beautiful State by its former inhabitants. Standing with other officials on a hill in Bennington County, and looking over the valley of the West River, a tributary of the Connecticut, they counted fifteen contiguous farms, of perhaps a hundred acres each, all fenced, and with dwelling-houses and barns in at least tolerable condition, without a single inhabitant. Beyond, toward the Connecticut, but hidden by the maple groves in the valley, were, as they knew, fifteen more, also deserted, yet all well situated and still showing signs of their former fertility. Statistics show that a similar condition prevails all over the State. In Windham County alone are more than forty thousand acres of land, once cultivated, but now deserted, and in the whole State the number of abandoned farms, complete with houses, fences, barns and outbuildings, must be several thousand. Yet Vermont is one of the pleasantest, healthiest, most fertile and most civilized States in the Union. In its river valleys is no malaria, while its hills are covered to the summit with vegetation. The reckless agriculture which has made portions of the South nearly barren has never been favored in Vermont, where a century or more of stock-farming has rather enriched than exhausted the soil; yet the people who once found happy homes there have crowded into the towns, or have left the State altogether. In thirty years, from 1850 to 1880, the increase of population in Vermont was five per cent, while the population of the whole country more than doubled, and that of the adjoining State of Massachusetts increased by nearly eighty per cent. Not pretending to any ideas on political economy, we will not try to account for this strange condition of things, but it is certainly curious that a region so favored in climate and position should be retrograding so rapidly.

THE establishment of a little Venetian glass-blowing shop among the Exposition buildings in Paris has given occasion for some curious reminiscences in regard to this ancient Venetian industry. It seems that the glass-blowers of Venice, or rather, of Murano, a little island half a mile from the city, established themselves on the island about a thousand years ago, in order to avail themselves of the fine, white quartz sand, which they found on the beach, and at the bottom of the lagoon. During the earlier years of the business, the Murano glass-blowers made only simple household objects, but, as usually happens, artists appeared, one by one, among the humble workmen, and through their taste and skill the Murano ware began to be beautiful as well as useful, and to acquire a reputation in the world outside. At the time of the Conquest of England, Murano glass was an important article of export from Venice, and the choicest pieces were sold at high prices to kings and princes. In 1223, the Senate of Venice ordered that the names of the glass-blowers should be inscribed in the archives of the Republic, and the Venetian nobles were happy to give their daughters in marriage to the Murano workmen, whose children took the rank of their mother. For five hundred years the business prospered, but at the end of the sixteenth century it began to decay, like the other industries of Venice, and not only the artistic traditions, but the chemical and mechanical secrets of the art were lost.

IT was not until 1856 that a rich lawyer, the celebrated Dr. Salviati, undertook to revive the manufacture of articles of which he was already an enthusiastic amateur. A few glass-blowers still practised their art in a clumsy way at Murano, and Dr. Salviati, in the intervals of his law business, examined and compared his own and other ancient specimens of glass, to see how they were made, hunted up old books and manuscripts for information, and made ready for the time when, closing permanently his law-office, he associated himself with a workman, descended from an old Murano family of glass-blowers, and took up the art in earnest. It is hardly necessary to say how completely successful his efforts were. Until his death, which occurred last year, the business flourished more and more, and the name of Dr. Salviati & Company was nearly as well-known in London and Paris as in Venice, not only for glass-work, but for work in mosaic and other peculiarly Venetian arts. Under his skilful direction many of the ancient secrets were rediscovered, and even connoisseurs find it hard to choose between the old work and the new. At present, the glass-workers form a well-trained and highly-paid body, who labor in perfect harmony for the common good. Unfortunately, the work, which involves much looking into the mouth of the furnaces in which the glass is melted and reheated, is very trying to the eyes, so that nearly all the men become blind between their fortieth and fiftieth year. Everything that could be thought of has been done to prevent this calamity, but so far without success, and the workmen are obliged to content themselves with the reflection that, as their habits are simple, and their wages high, they can almost always save enough money, while their sight remains to them, to keep them in comfort afterwards for the rest of their lives.

SIR EDWARD WATKIN, the principal advocate of the Channel Tunnel, has a new scheme, which will not commend itself much better than the old one to his conservative countrymen. If the Government will sanction the completion of the tunnel, he proposes to do what he can to promote the building of a direct railway from England to India. Of course, the beginning of the railway will be at the English end of his tunnel. Passing through to France, it is intended to go southwesterly to Gibraltar, where the trains are to be taken across to Africa on a huge ferry-boat. On the African side, the line is to follow the coast through Morocco, Algeria, Tunis and Tripoli to Egypt, and thence across Arabia to the Persian Gulf. After crossing this, in some way which is not explained, the road will follow along the coast of Persia to Kurrachee, where it will connect with the existing system of Indian railways. This road, if by any possibility it could ever be built, would be about the most useless railway ever constructed. To say nothing of the fact that passengers from England, instead of making a long *détour* through Spain and along the intolerably hot, barbarous and unhealthy north coast of Africa, and the equally hot and still more barbarous Arabian desert, could take almost a bee-line to Persia, over the splendid Russian railway, traversing a cool, fertile and highly-civilized country, the Mussulman fanatics would destroy the Watkin tracks as fast as they were laid. The Russian railway, in the small portion which lies in a region exposed to marauding tribes, is guarded by garrisons in all the stations, which are fortified for the purpose, while nearly the whole extent of Sir Edward Watkin's line would lie in a region mostly held by independent nations, who unanimously regard railways as a device of Satan, and the Englishmen who build them as the favorite servants of the same potentate, whom it is the duty of the faithful to exterminate from the earth by the quickest and most effectual means. It will be remembered that the building of our Pacific railways was several times seriously interfered with by the Indians, and the efforts of a handful of red savages would be of little account in comparison with the destruction which would be wrought in a few moments by the well-drilled armies of the Sultan of Morocco or the tribes of Arabian fanatics. If Sir Edward Watkin is really anxious to have his tunnel project carried out, we will suggest to him to devote his energies to the construction of balloons. Perhaps he and Dr. de Bausset might together arrive at a successful result, and he may be quite sure that from the moment that an air-ship carrying fifty tons of freight or passengers sails with precision to a point a hundred miles from its starting place, the fear of standing armies will cease to enter into the calculations of statesmen, for the reason that ten men, in a balloon capable of being navigated, could work more destruction in a week than an army of a million men could in a year, and that, as no fortifications would avail against a balloon, all nations would be held to peace and concord by the certainty of extermination if they gave cause for offence.

BERLIN DWELLING-HOUSES.



House of Herr Mosse: the Front.

THE average German house is finer-looking and more solidly built than either the average English or the average American dwelling. Timber is unknown as a building material except in the villages of the mountainous districts; and the coarse brick so common in England is reserved for barns, stables and out-houses. Dwelling-houses receive an outward application of mortar, composed of fine sand and lime or cement, whose light color bestows a more cheerful aspect than the dun of brick under a sky which, like that of England, is prevailingly dull and overcast. A greater profusion, too, of ornament is to be observed: the new, as well as the ancient houses, even of poor country towns, often possessing balconies, pilasters and cornices of elaborate designs.

The whole weight of precedence here is in the direction of durability in building. The German builds for renting as well as for living, and has an eye, in consequence, to a future minimum of repair. His money is spent exclusively on the skeleton of the building, the finishing and furnishing of the interior being held to be of very little weight. Often he lives contentedly in the basement or ground-floor of his house, considering the suites of upper rooms as a speculation, not as a portion of his home; and as for the extra ornament of a balcony on the first floor, its value lies, for him, in the attraction which it gives his house over the plain fronts of his neighbors. The wealthy burger who does not let apartments, on the other hand, houses his business under the same roof with himself.

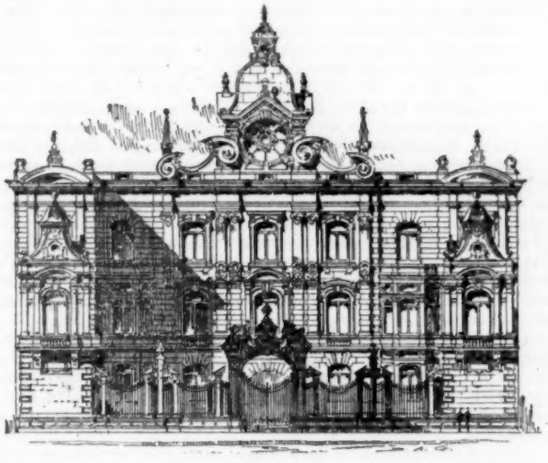
The instances are rare, therefore, where Berlin dwellings are units, or embodiments of a single purpose. Division of labor, so to speak, is not the rule in their case; or, rather, the final stroke of division does not obtain. The church has been lopped off from the home, except in the palace of the king and the obscure cottage of the mountaineer — those two strongholds of conservatism — inasmuch as what it embodies is a sentiment of a common religious fraternity under God. So, too, the school, the bank, the station: the horse-block, once the symbol of travel attached to every house, is transformed into the platforms of great railway depots; the peasant's "strong chamber" and chest into the public safe; the oak bench into the public grammar school. The manor-house, indeed, has a door still inscribed "The Justice Room"; but the example is exceptional, and is drawn, moreover, from the provinces alone. In the city, the resort of great hordes of population, civic and communal interests of every kind have each its own abiding-place, except one — trade is not loosened in Germany from the home. As the peasant, in contrast to the American farmer, keeps his cattle under the same roof with himself, so the German tradesman of the town retains, in contrast with the American, his wares in the same house with his family. He is indifferent to whether his business occasions a rare or a perpetual influx and outflux of the public, a little or considerable inconvenience, the loss of a minimum or a maximum quantity of room. He remains attached to the old patrician custom, and the patriotic literature of his country praises his conservatism.[1]

A successful domestic architecture is excluded under these circumstances; or, if not excluded — since the gentry and aristocracy, with their different traditions, are builders likewise — it is, at least, restricted in the direction of manifoldness more than is necessary. And, indeed, we find that a Berlin home is not a unit of entrance-halls, family-rooms, chambers and society-rooms, but a duplicate of these; or that the one roof and four walls enclose both families and a workshop, which is still worse. The number of styles of domestic architecture are few, and singleness of design, which is the first essential of successful architecture, becomes in the latter case mentioned, where a home and trading-house are combined, quite out of question. A building of this class must express but the half of its purpose, or the contrary purposes of privacy and the troublous publicity of business. Structures result that are stores or factories in form, with the use of family residence which they likewise serve left without due expression; or they wear the symbols of family sentiment or origin outside of interiors that are actually filled with bales and boxes.

Lübke calls attention, in his "*History of Architecture*," to the villas of Berlin as distinguishing the North German capital from Vienna, and as being among the finest productions of recent architecture. Naturally, the reform of separating trade from the home, that gradually must spread itself everywhere, has won more ground in the western German metropolis than in the eastern one, just as we find more families occupying houses by themselves on the Rhine than on the Danube. The villas which Lübke praises are residences of rich noblemen or of millionaires who cultivate with enlightenment the modern tendency towards independence and individuality. For the most part, they are edifices of ample dimensions on sites favorable to the laying-out of a harmonious garden-plan. They are constructed of light gray or yellowish sandstone in the architectural contours, and of brick covered with mortar in the filling-up walls. In the best examples, the flat surfaces also are of stone. The style of nearly all is Renaissance, or inspired by the Renaissance. Such are the main traits of the residences of Herr von Thiele-Winckler, Baron Barsig, Herr von Bleichroder, Herr Gerson, Herr Mendelssohn and Herr Sussmann. The Fridenthal house adds colored majolica to the sandstone and stucco. The Pringsheim Palace, which was endlessly commented upon by the public, brought to the exterior the polychrome aspect of the interior of old Fäger Street houses. The Soltman House, another landmark of the capital, breaks from the prevailing Renaissance, its style being Greek.

In the twenty years since Lübke's book was written, the increase of population, that goes on at the rate of forty thousand souls a year, has forced a condensation in building. The quarter lying towards Charlottenburg, which he mentions, has few duplicates in the newer portions. The demand for one-family villas is tolerably supplied, and any considerable addition to their number is likely to proceed only with a growing revolution in the conservative habits of the citizen class. For the present, at least, so far as my observation goes, the task laid upon architects is the old one of making plans for buildings that are crushed in between others, and of uniting the two purposes of residence and trade.

Of this type is the mansion of Herr Rudolph Mosse, just completed. The plan is by Messrs. Ebe & Benda, two architects of high local reputation, and is lauded by technical journals and the general press as an ornament of Berlin. It differs from the common run of houses in extending through from one street to another. A façade in the style of the Italian Renaissance, with a rusticated ground-floor, pillared windows and elaborate sculptured cornice, fronts a business square (Leipziger Platz); the other fronts Voss Street. This latter front, furthermore, while not original in its chief traits, the style being conspicuously that of the latest French Renaissance, is, nevertheless, rare for Berlin. The main front sinks back from the projecting wings at the right and left, so as to form a court-yard in its hollow. This is distinguished from the *cour d'honneur* of the old Hôtel Radziwill and the courts of its contemporary sister palaces in having



House of Herr Mosse: the Rear.

trees and gay parterres, besides wagon-ways, in place of the plain stretch of cobble-stone pavement, which was meant to resist the stamping of disorderly cavalcades. What charms is the harmonious development of architectural traits of the main façade into heightening effects from below upwards; as in the case of the *rustica* of the foundation, that is modified, first, to flatness of surfaces, is diffused as pillar-like divisions in the second story in support of the fluted pilasters of the third, to reappear in the terminating obelisks of the roof in its last modification as a horizontal line of ornament. Then the concentration of richness of ornament in the central portion of the front, as is seen in the pairs of pilasters at the immediate right and left of the central windows; whereas the next have but a single pilaster, and the more distant ones near the wings are devoid of any. This, too, must be regarded as a trait of artistic beauty. Owing to it, the gable-like cupola that surmounts the middle portion of this façade pleases the eye, despite of its heterodoxy. Then the projecting wings are but two stories in height, and the circumstance adds

[1] *Vid* Gustav Freytag in "*Soll und Haben*." Fontane; Willibald Alexis and Fredrich Spielhagen.

to the pyramidal aspect of the building—an aspect that in other respects is reserved in spite of its richness, and monumental notwithstanding its picturesqueness.

Whereas the exterior thus varies in several points from the usual Berlin house, the interior construction is highly typical. The ground-floor is given up to the business offices of the owner, who is a journalist; the upper, or third floor, to a tenant, the Ambassador of the Sublime Porte.

A paved passage-way pierces the main edifice from the square on the south front to the court-yard in the rear. In the wall at one hand a stairway pierces the building, in its turn, from below upwards to the dome of the roof. The stairway is spacious and well-lighted; as, indeed, one of the chief revolutions in house-building in recent years in Berlin has been the replacing of dark stairways with lighted ones. The walls are simple. The architectural decorations are of stucco of light hue, and columns or pilasters of violet-colored marble. The steps are of oak with a carved balustrade. They lead from the bureaux below to the two lodging stories above, both of which are similarly arranged. A hall leads into a bedroom at one hand, and at the other into ante-rooms. These latter conduct from one end into a corridor that branches into a passage in the western wing. In the angle of the two lie the kitchen and back stairways at the termination of the branch passage-way are the conservatories or winter gardens.

The dining-room, sitting-room, gentlemen's *salon*, *boudoir* and dancing-hall occupy the front, with a southern exposure. The library, the Gobelin-cabinet, billiard-room, picture-gallery and smoking-room fill the eastern wing, and are lighted from the court: except in the case of the cabinet, which, being in an angle, is lighted from a slit or light-shaft from above.

The style of decoration of both suites of apartments corresponds in general with the style of the exterior architecture: the rooms on Leipsic Square leaning towards Italian Renaissance; those on the court, to the French Renaissance and Baroque styles. The latter are still in the hands of painters and sculptors, but the intention of the architects is everywhere apparent. The picture-gallery near the extreme end has walls of sandstone precisely like the exterior walls. The pavilion is painted *al fresco*. The library, which begins to possess a comfortable air, has a gallery and closable wooden book-cases, with ceilings of wood. An increasing richness of decoration makes itself noticeable in the billiard-room, and the adjoining *salon* and Gobelin-cabinet. The wall-divisions, panelling and ceiling of the latter are of richly carved wood, the ornamentations in relief, being painted in gay and various colors. The *salon* has long walls painted in imitation of terra-cotta slabs: one of the gable walls, of glass, looks upon the court; the other, of mirrors, connects rather than divides the apartment and the dancing-hall, in the exterior southeastern angle of the house.

The opposite western angle is occupied first by the dining-hall. This is an apartment that strikes a Berliner by its size. The old German *saal* unites the functions of eating and dancing, and, when this double office became impracticable, by the demands of a sharp difference between the furniture of a room meant for conversation, and of one meant for supplying hunger quickly (the court set an example under the late Emperor William I of incredibly rapid serving), and as a *salon* with its sofas was the most indispensable, Berliners transferred their sideboards into some inferior room. The number of houses were few that could seat forty at once at table; but, in spite of the custom of serving *à la buffet*, sitting at table always remained the secret ideal of the aristocracy used as they were to the amplitude of their country *burgs*. With a reform of stairways, therefore, there began a widening of the dimensions of the dining-room. In the present case they attain a size capable, as I judge, of seating from sixty to eighty; or a length (although not quite the breadth) of the dancing-hall, or the largest apartment of the house.

The ceiling and panelling of the room are of oak, decorated with painted marquetry designs. A mantel of harmoniously-toned faience in one corner conceals the warm-water apparatus for heating; while the window, the gable and the back wall have each a buffet constructed as an organic portion and outgrowth of the panelling.

There follow from here in a single suite that terminates in the dancing-hall, like the rooms of the eastern wing, the three standard pieces of every genuine German home: the sitting-room, the *Haus herr's salon* and the *Haus frau's salon*. A library, billiard-room and dancing-hall are the signs of wealth and luxury; the terms "reception-room" and "*boudoir*" are exotics; *this* trio of rooms, in addition to the bedroom and eating-room which the lower classes have also, is the symbol of respectability, and, in Berlin as everywhere, they are the centre of family-life; of the three rooms that of the *Haus vater* being perhaps the most often used, as it is the most richly and comfortably furnished.

In the present instance, the sitting-room has a ceiling of stucco, doors, low panelling and frieze of ebony-toned wood, painted with marquetry designs of pale yellow. The gentlemen's *salon* is decorated in walnut wood; the panelling being high and giving the *nuance* of style for the book-cases that are carved out of the same wood. Both this ceiling and frieze, and the ceiling of the adjoining room are of stucco: the latter being perhaps somewhat too elaborate in design. The furnishings of the room, it must be remarked, are of rose and silver tones on a ground of sea-green. The air of half-affected, half-healthy, high-bred daintiness which they give the apartment becomes, however, common and almost mere restaurant-like worldliness through the introduction of exuberant bodies modelled in stucco overhead.

An exquisite *boudoir* in a house not far distant from this of Herr Mosse's, that of General von V. R., is spoiled by the same adherence to "genuineness" of style. The Renaissance, with all which it supplies for expressing our social tendencies, was lacking in both our modern idea of a wife, and in the architectural embodiment of the idea. An expression is to be found in one or the other modification of old styles for everything perhaps easier than for the typical modern wife, especially for the German wife, and the architect if anywhere must here call upon his own artistic and creative instinct.

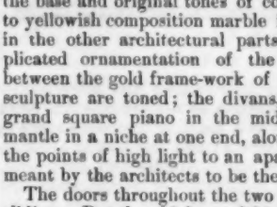
The dancing-hall, lastly, conveys an air of rich refinement that is not without its appropriate kind of light sensuousness. The clear transparence and simplicity of amber and white and gold, that are the base and original tones of coloring, give way, for the most part, to yellowish composition marble in the columns and yellowish stucco in the other architectural parts, relieved only by the gilded complicated ornamentation of the walls. Paintings fill the fields between the gold frame-work of the ceiling. The marble groups of sculpture are toned; the divans, of scabious-colored brocade. The grand square piano in the middle of the room, and the faience mantle in a niche at one end, alone are of white and gold; they lend the points of high light to an apartment that is the climax, and was meant by the architects to be the climax, of taste and richness.

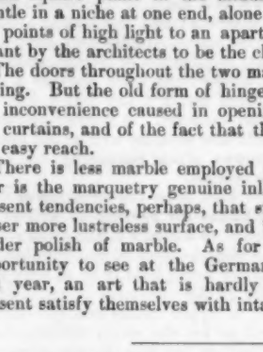
The doors throughout the two main suites of rooms described are sliding. But the old form of hinged-window is retained, in spite of the inconvenience caused in opening the casements which catch in the curtains, and of the fact that the handles are generally too high for easy reach.

There is less marble employed than is the case in older houses. Nor is the marquetry genuine inlaid-work. It is characteristic of present tendencies, perhaps, that stucco should be preferred with its looser more lustreless surface, and in consequence warmer air, to the colder polish of marble. As for marquetry, it is, as I had the opportunity to see at the German National Industrial Exposition last year, an art that is hardly yet revived. Germans for the present satisfy themselves with intarsial painting.

Countess von Krockow.

THE PROBLEMS OF CONCENTRATED RESIDENCE.[1]





When we speak of concentrated residence, we naturally think chiefly of the principal form of such concentration, large cities; and, in our own country, of its most crowded city, New York; and, in New York, of its most prevalent form of concentrated residence, its tenement-houses. And we generally think next of New York tenement-house evils.

The New York tenement-house evils most generally complained of may be stated to be:

1. Overcrowding.
2. Dirt (including contaminations from neglected or bad drainage, etc.).
3. Lack of command of air and light.
4. Promiscuity or lack of privacy.
5. Injury to health, or morals or manners, resulting from the presence of any of the foregoing named evils.

In New York, as elsewhere, the problem which concentrated residence presents us is to find a way of eliminating evils, while yet retaining a high rate of concentration, and so retaining the convenience of residing close to the centre of our chief interests, whether of work or recreation, and the further convenience or economy of combining and coöperating with our neighbors to more easily and cheaply supply our needs or wants, physical or social.

While, then, not losing sight of this convenience of living close to the centre of our interests, and noting that a similar wish on the part of our neighbors must infallibly lead, if acted on, to a very high rate of concentration at the points where such interests most centre, let us consider the evils which we have just named as among those which such concentration of residence has brought with it in this single instance of New York tenement-houses.

And first, we can easily understand and concede that where any one evil exists by itself, it is more easily dealt with than where combined with other evils, and resulting from them.

Thus the evils named fifth and last in our list, ill-health, or bad

[1] A paper by Mr. E. T. Potter, prepared for the late Congress of the American Social Science Association, but unread through lack of time.

morals, or manners, for instance, are not confined to overcrowded localities or tenements. Yet in overcrowded tenements, owing to the lack of privacy, the bad air, the overcrowding, it *is* more difficult to avoid them. And so the responsibility for them is partly divided. Though largely personal matters, yet they are not completely so where privacy, good air, cleanliness and space, are not fully at command.

So with the evil of lack of privacy. Though a lack of privacy is not confined to tenement-houses, but is rather the usual incident of daily life of many of us, and while, perhaps, few really care for much privacy, for very long, or really value it as much as they often profess, yet we all wish to have privacy at complete command at need. Yet a complete command of privacy is, in a tenement-house in New York at present, sometimes and in some respects, though not all respects, a difficult matter. And, in general, we may certainly concede that the greater the crowd, or, in other words, the higher the rate of concentration, the more difficult it is to secure privacy, except, indeed, by some form of a prison-cell-like seclusion.

The evil of lack of air and light is still less a personal matter. And, though more often a matter of personal indifference, or choice, or lack of care, than most men and women are willing to admit, yet the more closely built-up the locality, the more care and study has to be put forth to secure proper air and light, and then succeed in keeping them.

The evil of dirt, to be sure, is almost wholly a personal matter. There are many tenements whose neatness might put palaces to shame. Neatness, says the French proverb, is the luxury of the poor. And it is a luxury often to be found in most unexpected places, and maintained at a high rate, and with an infinity of care and labor. It is so little a matter of architecture, or plan or locality, that the most disgustingly filthy tenements we find have often been the houses of the rich; and sometimes, so little a time before that the building has had no time to get really "out of repair," but is only shockingly dirty. Still the more crowded a tenement-house is, if crowded with dirty people, or even if it has but one or two dirty people in its crowd of tenants, the more difficult it is not to have the whole house get dirty, or, at least, get a dirty aspect. And, further, the darker and more airless its interior, the more difficult it is, generally, to keep a house fresh and clean.

We note, then, that the evils of ill-health, bad morals or manners, lack of privacy, lack of air and light, and lack of cleanliness, though often present in tenement-houses, and combined with overcrowding, yet may be present in other places, and in places where overcrowding is wholly absent. Yet, still, that they are evils which it is more and more difficult to deal with and avoid and prevent, the higher the rate of concentration of residence, or, in other words, the greater the crowd and the crowding. I do not say "overcrowding." There can be, it seems to me, no overcrowding, so long as the evils of crowds are overcome and absent. But wherever the evils of crowding are present, there the evil of overcrowding is present, whether resulting from the presence of a crowd, as in great cities, or from ignorance or greed, as in badly-planned farm-houses and cottages, or from mere sloth and indifference, as often in wild camps and savage huts.

Thus the evils, the real evils, usually connected with overcrowding are also largely personal matters, possible to be met with in all countries, and in localities where there is no crowd, or no occasion for one. Still, in general, the evils of overcrowding are most to be looked for where the crowd is greatest. Even then, if the crowd is left to itself, its atoms quickly arrange themselves, so that the evils of overcrowding are largely avoided, while the value of concentration of residence is still in a very high degree secured. The freer the individual atom to avoid evil, to avoid harm to itself, the less is there likely to be at any one point of congestion, or too great concentration, even though a very high rate of concentration of residence is maintained, and is maintained over a widely extended area; as we see, for example, in our own country in the city of Philadelphia.

Whether less or greater the numbers in a crowd, and whether distributed over a less or greater area, the moment that, at any one point, the crowding breeds serious evils, even serious discomforts, there there is overcrowding.

Overcrowding can only be lessened, and its repetition avoided, it seems to me, in one of two ways. We must either lessen overcrowding by lessening the numbers constituting the crowd, or else, without lessening the crowd, we must wholly remove the evils which constitute overcrowding, and thus change *over*crowding, or a bad form (and, therefore, a too high rate) of concentration, into simply a good form of concentration; a form, namely, giving the benefits of concentration without attendant evils.

To diminish the crowd we have again two methods: one agreeable, one disagreeable. We can lessen the crowd at any one point by presenting greater attractions elsewhere. This is the agreeable method. Or we can lessen the crowd by force, by laws limiting the numbers to be housed in any given space, and carrying out the provisions of such laws, where necessary, by force. This is the disagreeable method. Yet when other methods fail, self-defense makes it necessary that we *should* limit the numbers housed in any given space to the just-possible of comfort necessary to health, and so to life; just as we must limit the numbers of those entering a life-boat to its life-saving capacity.

The limiting by law of the numbers permitted to be housed in a given space, the Board of Health of New York have wisely endeavored to make use of; but to do this in *addition* to careful removal of all possibly removable features injurious to health. And the death-rate in the chief tenement-house districts in New York is reported to be materially dimished by these means. But the health laws in the matter of limiting the numbers of occupants in a house are very difficult of enforcement. Violations in some quarters are reported as often unpreventable. Houseless people find housing somewhere, even if in houses already filled to their legal limit. Still as fast as needed additional housing is obtainable elsewhere, the possibility becomes greater to keep the numbers housed at any one point within the limit fixed by law, and to retain them thus within legal limits by force if necessary. I suppose there are occasions when, to do so, the employment of force will always be necessary. There are people whom, in this as in other matters, nothing but force will restrain.

But I have felt that this method is a disagreeable one, for not only is law, or the forcible imposing and carrying out of enactments a form, after all, of violence or war, but also necessarily like most forms of violence it is destructive rather than constructive. It does not help those in trouble; though it checks them from harming others. It does not help forward our race to greater comfort and more convenient living. It is cutting rather than unravelling the knotty problems of concentrated residence. It does not even cut them, except in a temporary sense. It merely, for the time, thrusts aside the question, and thus in a measure the hope, of a solution of such problems.

Turning from this sometimes necessary but disagreeable and difficult, and at best only temporarily effective, and so in the long run futile method of dealing with overcrowding, to the more agreeable method of lessening overcrowding and over-concentration of residence in any one spot, by offering and providing greater residental attractions elsewhere; and so drawing away the crowd from the most crowded parts of our cities, we find that this method is now receiving, throughout our country, a great impetus from the growing interests in coöperative-building associations, and a more widely-spread knowledge of their beneficient possibilities and worth. Through these and other associations, and through individual effort, the pleasant work of providing pleasant and healthy homes in countless pleasant or hoped-to-be-made-pleasant localities, is sure to go on; since the prospective rewards to the promotors, whether prospective inhabitants of those localities or others, are constantly seen to induce men to enter upon such an interesting and inspiring task.

But, however well this task goes on, still it does not answer, but rather leaves on one side and unsolved the question: What is the very highest rate of concentration of residence possible at any given point, consistent with health and comfort?

This problem, however, it seems to me, still presses, and will always press, for solution; for the highest rate of concentration of residence consistent with an absence of discomforts and perils to health will, in some localities, be temporarily or permanently always in demand, because it will be looked upon by so many as the filling of a great need, depending, as it does, on the advantage of nearness to some temporarily or permanently important and centralizing point.

It has seemed to me wise, therefore, to employ such leisure as I could command in studying this matter, and to do so in the interests of others, even when I saw no way to make it profitable to myself.

The possibility of a rearrangement of the component parts, or atoms, whether persons or inanimate material, in the most crowded localities, and the removal of all removable obstacles to such rearrangement and to individual seeking of the most healthful and comfortable conditions, consistent with a high rate of concentration of residence, has thus been my study for a number of years.

"Where a man sleeps there he resides, there is his legal residence," says the English law. Where, in a limited area, many have their residence, there there is a form of concentrated residence. We see in different places different forms of concentrated residence; each form has its merits and defects or drawbacks. These merits and defects are — some local, some general. Each form would be by far so much better for general use elsewhere without these drawbacks, any or all of them; and, in some localities, that form which combines the most of the merits of these differing forms, yet avoided their drawbacks, would have a certain advantage of desirability over them all. We can conceive of such a form of concentrated residence being slowly evolved out of men's experiences of these various merits and defects, and coming into widespread use through a general, though entirely unsystematized, recognition of the varied values of such a combination. Or, again, we can conceive of the various merits and defects of all these forms being examined into and collated and tabulated, and a systematized recognition of them being followed by an attempt to combine in a new form of concentrated residence certain merits peculiar to one and another of the previously existing forms, while at the same time avoiding in the new form their demerits.

It is such a system, such an artificially-arrived-at system, that I desire to call attention to.

In seeking to find a possible way in which one and another evil of New York tenement-houses might be avoided, I came to look for the cause of certain of those evils, which seemed to be almost peculiar to the tenement-houses of New York and its vicinity, in some feature peculiar to the locality where such evils were present, and absent in localities where such evils were generally absent. In this way, I

passed from the study of certain evils under one form of concentrated residence to a study of the general subject of the problems of concentrated residence.

In pursuing my studies on this subject, I have not, after many years, yet found an instance where those problems, so pressed for solution, as at the point where I began to study them; viz., in the tenement-houses in New York.

Thus, in the vast city of London, with a population far larger than that of New York, Brooklyn and Jersey City combined, though I find overcrowding often greatly complained of, yet nowhere do I find such a thing known as, for instance, the majority of the people of the working class sleeping in bedrooms with no direct air or light, as is the case in the majority of the tenement-houses of New York, Brooklyn and Jersey City. Again, further, and still more remarkable, I cannot find in Philadelphia, a city of over a million inhabitants, either any prevalence or scarcely a known instance of this evil of bedrooms without direct air and light; nor, indeed, do I find in Philadelphia any general complaint of overcrowding.

The fact that London, a city vastly larger than New York, Brooklyn and Jersey City combined, yet is wholly without an evil notoriously prevalent in and characteristic of New York, Brooklyn and Jersey City, destroying the comfort and injuring the health of perhaps a majority of their inhabitants, and adding to the death-rate, seems to me most significant. And still more significant is it, it seems to me, to find an evil absent in a city of the size of Philadelphia which is prevalent in cities, some larger and some smaller, so near to it as New York and Brooklyn and Jersey City. Such a fact seems to me to indicate that the cause of the presence of this particular evil must be looked for in the presence of some factor present in those cities in which the evil prevails, and absent in the city where this evil is markedly absent.

Philadelphia, like New York, is a city lying between two rivers, the opposite sides of these rivers being occupied by West Philadelphia and Camden, just as the opposite sides of the rivers on each side of New York are occupied by Brooklyn and Jersey City. West Philadelphia is connected with Philadelphia by bridges, just as Brooklyn is connected with New York by the Brooklyn Bridge. Camden is connected only by ferries, and lies in a different State from Philadelphia, just as Jersey City is connected with New York only by ferries, and lies in a different State from New York. These subordinate cities have behind them unoccupied area, giving opportunity for indefinite extension in the one case as in the other; and the main cities lying between them, while bounded on the east and west by the rivers, between which they lie, can both extend indefinitely in length: Philadelphia on both north and south, and New York on the north. If we contend that here is a difference — that New York can extend only on the north, while Philadelphia can extend on both north and south — that difference can scarcely be made to account for the absence of evils in Philadelphia which are present in Brooklyn and Jersey City, cities which can extend indefinitely not only on two, but on three sides.

If we look closer at good maps of all these cities, however, we see a marked difference. The maps of Philadelphia, West Philadelphia and Camden show an infinity of small streets, at frequent but irregular intervals, crossing one another, generally at right angles, indeed, but otherwise governed apparently by no other rule than the wise one of the needs of the locality and its inhabitants. Further, on a map of sufficient size and fulness of detail, we note that these small streets give access to lots of all sizes, some of them exceedingly small indeed; while, on the other hand, the maps of the main areas of New York, Brooklyn and Jersey City show no such multiplicity and variety of streets, of various widths and lengths, to suit the varied needs of a community, but only one inflexible street and lot system — a system also rectangular, but allowing of or encouraging no subdivisions of large areas of land by small streets, and so *giving no means of access to* small lots such as prevail in Philadelphia, and on which stand the dwellings, the cheerful, wholesome dwellings of the majority of its inhabitants, every dwelling with direct air and light in every room, through-and-through draughts of air at command through most of the dwellings, separate entrances, entire privacy and individual ownership.

Becoming gradually and slowly convinced that in the absence of readily procurable small lots, to meet modest needs and limited purses, lay the cause of the absence in New York and Brooklyn and Jersey City of small houses owned by their occupants, as in Philadelphia, and lay the reasons why the place of such small houses, owned by their occupants, was in New York, Brooklyn and Jersey City taken by tenements, rented generally by the week from landlords owning tenement-houses, I had the privilege, in 1877, of reading a paper before this Association presenting this view. And, as a corollary of this view, the further ground practically taken in that paper was, that the solving of the problems of concentrated residence is rather hindered than furthered by too hastily laying blame for evils where, perhaps, blame is not due; as, for instance, in esteeming that landlords are responsible, or chiefly responsible, for tenement-house evils. It seemed to me that, by blaming and directing indignation against landlords, inquiry and effort are diverted away from a true and more practical view of the subject, and so are directed away from the further inquiry and study through which the most lasting beneficial results may be hoped to be obtained.

Far from crowding being an advantage to the landlord, the wear and tear of his buildings is less when fewer people live in them. Landlords do not crowd tenants into places, large or small. They only open the doors, and the tenants crowd in. The overcrowding complained of in New York, Brooklyn and Jersey City, for instance, is in general due to causes for which the landlords are in no way more responsible than as all of us are responsible for results of conducting business on business principles. The current price of space in houses is, like the current price of flour or bread, governed by the law of supply and demand. In charity, the landlord may give away space, just as the flour merchant may give away flour, or the baker give away bread. But we have no more right to demand charity in the one case than in the other.

So far as this is conceded, the problem is simplified in that it remains not a moral problem, but merely a mechanical one.

If the evil of a lack of air and light, for instance, is even generally, though not invariably absent where there are no tenement-houses, and yet, if the landlords who own tenement-houses are not responsible for the tenement-house system which has developed this evil, where does the responsibility for this evil rest? The responsibility, as stated in a paper I read before this Association in 1877, rests with the civic enactment, which, in New York nearly a century ago, and somewhat later in Brooklyn and Jersey City, imposed on those cities their inflexible, deep, big, close-backed lot system. And behind that enactment was the sovereign people, seeking the beauty of order and a simple, orderly and symmetrical lot system, yet blindly bringing about the hideousness of disorder — the disorder of suffering, of needless suffering, suffering absent in greater cities where this orderly street and lot system is absent, and bringing into a city, by nature hygienically one of the most favorably placed on earth, *needless* suffering through the loss of one of its best gifts — the almost daily sea-breeze — and thus bringing suffering to all every summer, and to countless little children not only suffering, but even suffocation and death.

Yet whatever the suffering, whatever the restraint of laws, whatever the attractions created elsewhere, still crowds do press in wherever the interest is greatest — the material interest or the mental interest. People will naturally take it for granted that where their fellows most press to be there is something worth pressing for, and which they, if on the spot, may share.

The interest of sovereigns has founded cities in the past — an Alexandria, a Constantinople, a St. Petersburg; the interests of the many, the sovereign people, founds and will found the cities of the present and the future. How are they to be ordered? Is there to be order? Yes, the order that gives the most enjoyment, most subserves the material, mental and social interests of the citizens, while yet it most avoids evils to them.

To find this order is the problem of concentrated residence.

ILLUSTRATIONS

[Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.]

SHIRLEY.

[Gelatine Print, issued only with the Imperial Edition.]

For description see article on "Old Colonial Work in Virginia and Maryland," elsewhere in this issue.

COMPETITIVE DESIGN FOR THE CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK, N. Y. — MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Issued only with the Imperial Edition.]

THE peculiarities of the site which has been selected for the cathedral, have been carefully considered in order that there may be mutual adaptation and harmony between the building and its locality, taking advantage of the great natural opportunities which this site affords for varied approaches, and for special modifications of the immediate surroundings.

It would seem that under the general law of development, church-life and church-architecture have moved together in mutual sympathy and correspondence. In modern times the Church has been advancing in its life by keeping what was good in the Reformation, and by correcting its excesses. It has been felt that she should do the same thing in her architecture. She should strip the Renaissance of its excesses, and keep what is good in it as the basis for an advance to something better. If the Church would go back to the mediæval in architecture, she must go back to the mediæval in life; for she must live as she builds, and build as she lives.

This principle has determined the style of the design. Aiming to keep the character of the Basilican or first forms of a house of God, and to keep the lofty spirit of the Gothic, but to accept the real advance of the Renaissance style only avoiding its excesses. For this reason the "Transition Renaissance Style" has been adopted.

The subdivision and the arrangement of the interior of the building include the following provisions:

For grand religious gatherings we have the body of the church with the nave, transepts, dome, triforium (gallery), chancel, altar,

bishop's throne and stalls for the clergy, a large choir with a triforium around it, providing for an increased number of singers. The ambulatory admits of processionals around the whole interior of the cathedral.

The grand organ is placed in the gallery at the south end of the nave. There are also two small organs on the north side of the dome.

For daily or Lenten services and for special ceremonies, marriages and funerals, a chapel has been provided in the east transept which will accommodate a large congregation.

To the baptistery a special place has been assigned in the west transept, where it will be available for ordinary and for special baptismal services.

The morning chapel is placed on the east of the chancel, where it will be most accessible from the avenue for daily services. This chapel is of sufficient size to accommodate an ordinary congregation.

For polyglot congregations, or services in different languages, six large chapels have been provided, three on each side of the cathedral, opening into the aisles.

Much care has been given to the arrangement of the approaches to the cathedral. Stairs, inclined walks and drives lead from the different sides of the building directly to the grand vestibule and to the several entrances. On the south front, half-way or resting-places in the form of semicircular porticos, to be decorated by memorials, have been made a feature of the foreground.

North of the cathedral a separate building for the chapter-house has been provided.

COMPETITIVE DESIGN FOR THE CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK, N. Y. MR. T. P. CHANDLER, JR., ARCHITECT, PHILADELPHIA, PA.

[Issued only with the Imperial Edition.]

COMPETITIVE DESIGN FOR THE CATHEDRAL OF ST. JOHN THE DIVINE, NEW YORK, N. Y. MR. W. S. FRASER, ARCHITECT, PITTSBURGH, PA.

IN planning this building the chief care was to keep the floor at the level with the highest point of the site and make the entrance most used the one in the transept, while the proper relative importance of the front was not lost to sight.

THE THEORY OF THE MOULDINGS.

ARCHITECTURAL mouldings are defined by Gwilt as those parts of an order which are shaped into various curved or square forms, but this attempted definition errs by including too much, as there can be no part of an order which is not so shaped — which is not either curved or square. A like objection applies to such an account of the word "moulding" as "a general term applied to all the varieties of outline or contour given to the angles of the various subordinate parts and features of buildings." This definition while too wide in one direction is too narrow in another, since it is manifest that the most important parts and features of a building are quite as susceptible of moulding as the subordinate.

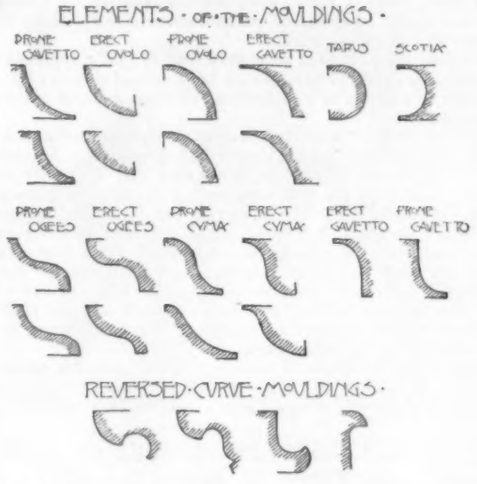
Let us rather say that by moulding we understood the treatment of a portion or the whole of an architectural member, so far as a contour is given to it which is not the simplest that is indispensable for its function but is conferred upon it for the sake of expressive enrichment and beauty.

A moulding, therefore, may often be truly a subordinate member which like a string-course or an architrave band might be removed or suppressed without injury to the structure; otherwise, an elemental member, a cornice for instance, or an archivolt may consist entirely of moulded parts. Such a member is moulded when a profile or section is given to it more varied and elaborate than is at all necessary for its special office,— when curves and offsets replace the continuous right lines and plane surfaces which would be equally serviceable and far more easily executed. The function demanded of a column either Doric or Ionic is in no way helped by the refined and delicately executed fluting of the shaft; the flutes, therefore, come within the definition of mouldings; so also for like reason do the channels, bevels and rustications of masonry.

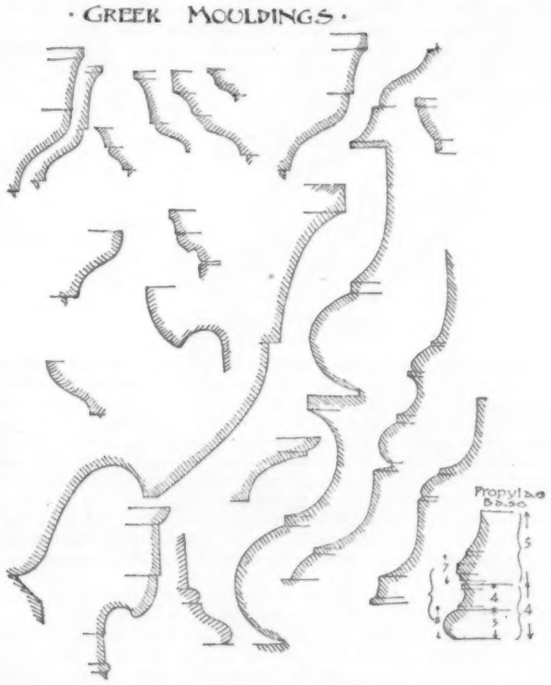
Mouldings are either plain, in the sense that their forms are determined and manifest by a single transverse section; or they are complex; that is, carved either in continuous sequence like the so-called egg-and-tongue moulding, grouped, like the enrichment of capitals or Gothic bosses and finials, or distributed like the crockets or antefixæ.

The most important contribution of moulding to the general effect of architecture is in emphasizing the special sense and function of the architectual member which it is applied to. So it is that a well-designed drip-moulding reinforces the motive of the projecting cornice which carries moisture clear of the face of the wall; the spreading base of a column does a like service to the purpose which is manifest in the increasing diameter of the shaft from above downwards.

These are examples of repetition, a leading resource of emphasis, which testifies to importance as echo testifies to force, while still giving additional distinctiveness to meaning. Repetition here as in discourse, when skilfully varied, attracts and determines a due degree of



attention by implying sustained interest; it is a marked negation of the careless and the casual. To repeat is to insist. Mouldings have a further value as employed to accentuate with happy effect, the limit of an architectural member, and to soften in some special degree the abruptness of transition to the next. A distinctively terminal member pronounces the individuality of the member it pertains to, while as intermediate, it is capable of being treated in a manner to intimate organic relation to another. The capital of a Doric column is unmistakeable as a completion of it as a distinct



member of the order; but the predominance of its horizontal lines brings it into sympathy with the architrave above, while transition from the vertical shaft to the flat abacus is erased by the curved profile of the echinus. The determination of the precise degree of curvature and uprightness to be given to this profile, was an exercise and a triumph of Greek architectural design.

A further use of mouldings is lastly to preclude any sense of cum brousness or ponderousness.

To what extent it is desirable that a sense of mass or solidity

should be relieved, depends upon the characteristic expression which it is appropriate to realize in a particular building. Clumsiness has to be precluded in any case, and when very large and solid masses are necessarily employed this can only be done by a treatment which exhibits ease and freedom as compatible with energetic mastery. The assurance that great power is exerted effectually without entailing exhaustion, is only satisfactorily evidenced by concurrent manifestation of grace.

The value of mouldings is largely enhanced by the beautiful effects of reflected light and cast shadows to which they lend themselves under bright illumination, and even under the influence of diffused light; many of their forms also are contributive to embellishment as happily receptive of painted patterns responding to their outlines with graceful variation.

The elementary forms of some mouldings are fully apparent in profile; others are only to be exhibited by a normal section; but all are reducible by analysis to combinations of right lines, of curves, or of both together.

Purely right lined mouldings are either rectangular or such as, involving lines at other angles, may be called splayed. An architrave band or the fascia of an Ionic architrave may exemplify the rectangular moulding; the horizontal section of a triglyph gives a series of splayed mouldings. Narrow rectangular band-like moulding, employed independently, is usually called a fillet; but this term must not be used for a flat returned surface which is adopted merely to obviate the inconvenience of a sharp or thin angle whether due to the meeting of two right lines, two curves, or a right line and a curve. Such terminations are better referred to by such names as right edges or splayed edges, as a rounded outline in like position may be called not a bead but a segmented edge.

Considerable resources of variety are available for architecture even when it accepts restriction to right-lined mouldings. The indispensable element of contrast is at command in varied proportion

of bands and fillets, and then more importantly as between rectangular and splayed profiles. Stubborn material, limitations of technical appliances and skill and the necessity of speed and of cheapness, may combine to enforce preferential right-lined mouldings, but Norman architecture shows how even under such conditions it was equal to great achievements. The dominant dry severity of the rectangle was tempered by the splay, and then with little more obligation to curvature than cylindrical piers and semi-circular arches. In Greek architecture the Doric style is distinguished from the Ionic by a gravity which owes much to the predominance of right-lined sections and to the simplicity of those curves which it does, with much economy, admit.

Curved mouldings are either concave or convex in section; a given section in outline in itself represents either one or the other.

The curves employed may be regular like the circle, ellipse, parabola, hyperbola, etc., or irregular like curves drawn by hand which are not reducible to any precise rule and principle. Such seemingly irregular curves, however, when they tell as graceful, will usually prove on close examination to have dependence on some latent principle of regularity.

What is known as the ovolo is a convex moulding of which the outline is a segment of a circle not exceeding the quadrant, it may be in character erect as more or less upright, or prone as having its lower edge in advance of the upper.

The same profile which is erect as the limit of a solid in one direction is prone as bounding solidity in the opposite.

The proper segmental ovolo or moulding formed of a portion of a circle, is only one variety of a class; another variety most nearly allied to it is formed of portions of two circles struck from different centres and different diameters.

To another ovolo class are to be assigned the mouldings of which the sections may be elliptical or, as in the brilliant instance of the echinus of Athenian Doric, hyperbolic.

Of the curved mouldings which exceed a quadrant in section, the smaller are known as beads; a larger is a roll or torus, terms which need not be changed even if the roll, as is frequently the case, is struck from two centres.

These convex mouldings again have others concave which correspond to them. The concave moulding of which the normal section is horizontal like that of the flute of a column is a hollow, the convex is a reed; the right edge between two flutes is technically known as an arris.

A hollow which is antithetical to a convex roll, and of which both the terminations are in advance of the extreme recess, is a scotia, whatever the degree of recess or difference of projection between the terminations.

The concave outlines antithetical to the prone and erect ovolo class are those of the prone and erect cavetto; this term may be extended to comprise the same outlines as prolonged and dying into a right line.

The combination of these simple outlines gives us mouldings of reflex curvature which may be classified according to the distinct character as cyma mouldings or ogee mouldings. Each particular type may occur either as erect or prone, accordingly as its upper margin does or does not over-hang the lower.

It will be observed that these combinations admit of infinite variety by differences of proportion: the records of Greek architecture abound in beautiful examples.

Concave and convex curves may be combined on another principle, not as reflexed curves but as reversed. The typical example of this is the Greek drip-moulding, usually known as the bird's-beak moulding; the chief varieties are distinguished as formed by two simple curves, or by a simple associated with a reflex curve.

Some of the forms are found susceptible of application as prone, particularly the combination of a cavetto and ovolo.

Such may be considered to be an enumeration which has some claims to be exhaustive of the elementary mouldings. Let us now consider the resources of varied expressiveness and grace which they provide beyond variation of proportion individually. The Greeks — our masters — combined them into sets and systems with admirable effect and it ought not to be impossible to recover from the recorded and recovered examples some insight into the secret of their success.

The simplest scheme of composition of mouldings is the association of exact similars as in a triglyph or the flutes of a column, or of similars with varied proportion, as in some bases we find a large and a small roll in immediate juxtaposition. The subbase of the Ionic column at Bassæ has a broad prone cavetto superposed on a narrower of a different pitch. The fascias of an Ionic architrave may be taken as coming within the same rule. Otherwise pairs of mouldings of identical type are not to be met with,— certainly not in works of the great period. We do not find cyma upon cyma or ogee upon ogee, either as prone or erect; as little do we find such a union as is frequent in declining Gothic of a cyma curve meeting the return of an ogee or dying into it.

The Greek architect had the same regard for the value of contrast in conferring decision and distinctness and the same mastery of it as was exhibited by the Greek sculptor in the employment of drapery to heighten the effect of the nude and in bringing the fine folds of the chiton into relation with the bolder of the peplus. It were an ill escape from monotonous tameness to cross-purposes. Contrast is distinguished from crude contraction by the subordination of one element for the advantageous display of another and by well-proportioned subordination.

After the contrast between vertical and horizontal lines and splayed, the simplest available is between right lines and curves, simple curves, reflexed curves, and reversed.

Groups of mouldings constantly owe much of their charm to the contrast with the right lines and plain surfaces of which they are the proper finish and adornments. The mouldings of a frieze or of the capital of an anta are subordinate in nature to the members they are attached to. But when we regard a composed set of mouldings in itself, the purely right-lined member, as band or fillet, becomes subordinate as introduced to give relief and background to the more varied elements associated.

The cymatium of the Parthenon is a bold simple curve, a segment of a circle, between a crowning fillet and another more than double in width below.

In the string-course over the Panthenaic frieze, the plane band is intermediate between curved mouldings — reversed and reflexed — the hawk's beak above and an erect ogee below. In other cases the positions of the contrasted curved mouldings are reversed.

In the capital of the antæ to the Parthenon posticum a bold hawk's-beak moulding combined with an ovolo and a bead below it is intermediate between a broad fillet with delicate ogee margin above and a broad fascia below.

Rich resources of effective contrast are available in associations even of simple with simple curves. There is ever the marked distinction between them as convex and concave. The apophyge of a

column is a simple cavetto which is very different from the simple roll which it descends upon, while as a simple curve and as involving a partial tendency to circularity it exhibits that modified similarity which is indispensable for the most harmonious contrast. The combination is found again at the summit of shafts of columns below the capitals, in reversed and erect presentation. In other cases a cavetto is shown projecting beyond an ovolo or roll below it: the podium at Tivoli supplies an example.

In these as in other instances presently to be cited there is scope for variation in the relative dimensions of the associated elements and in their relative projection; but the projections always seem to be governed by a furtive relation to a certain line which would gracefully include and circumscribe both.

More complicated harmonies are generated by the association of simple with reflex curves.

The cavetto combines harmoniously with the ogee either as superior or inferior element. It is employed as the superior over and over again in the details of the temple at Bassæ, with marvelous and ever beautiful and appropriate variation of proportions. It also occurs in the lower position — as in the basis of a pedestal at Priene, as prone supporting a prone ogee.

A simple bead below an erect ogee is freely admitted among smaller mouldings and especially as carved, but seldom if ever executed of considerable dimensions.

A small erect cavetto supports the bold erect cyma of the corona of the pediment at Bassæ. I do not trace it in connection with a prone cyma, which indeed is universally eschewed by the Greek architects. Their Roman successors seem to have snatched at it as a chance of novelty, but only to introduce an element of weakness in their bases precisely at the point where vigor is all important. The temple at Tivoli, however, which in many respects has much more claim to be considered Greek than Roman, has an ovolo immediately supporting the erect cyma of the cornice.

A very positive contrast is obtained by the association of a simple and a reversed curve; as an erect cavetto surmounting a bird's-beak moulding. The temple at Bassæ supplies a number of examples beautifully and appropriately varied in proportion.

The cymatium and mouldings of the pediment of the temple, which are drawn and engraved to full size by Cockerell, present a grand system comprehending a union of all the erect and reversed mouldings. The fine predominent sweep of the cyma is bordered, as rim, by a delicate ogee, descends as if by natural return upon a cavetto and below again as easily upon the reflex curve of the drip-moulding.

It is not easy to conceive a nobler example of the skilful employment of proportion to retain variety in due subordination and render all contributory to graceful and dignified effect.

If we care to compare single mouldings to syllables and simple combinations of them to words, we may be satisfied to accept such a disciplined sequence as equivalent to an enunciation pregnant with meaning.

A reflex curve in virtue of the change of curvature involves a contrast within itself. If we mark the point of transition by a right lined break, we resolve the continuous curve of an ogee into a cavetto and an ovolo, a combination closely related to that of a cavetto and a roll or torus.

The reflex cyma is resolvable on a like principle into a combination of two simple curves: the cornice of the Tivoli podium is an example.

The ogee is developed into a proper reversed curve when the concave outline is finished by a sudden return. A prone ogee which is so treated and has also its lower return interrupted, presents a section which is closely related to the combination of a scotia with a torus, or a scotia and ovolo. In some of these modifications it appears to be ambiguous whether we ought to describe a moulding as composed of a shallow scotia and torus, or as a doubly quirked ogee.

It is best however, when mouldings are in question which follow a curve, as in the case of a base, capital, or arch, to adhere to the term scotia.

The fortunes of this combination — scotia and roll moulding — the most positive contrast of concavity and convexity — are more extraordinary than those of any other. It is never applied in Doric architecture, yet it is found in the Mycena column which antedates Doric by centuries, attained to perfect refinement in Ionic and only passed down through one stage of declining art to another, to revive and conduce importantly to the most beautiful developments of Gothic architecture.

The natural development of this subject leads up to the consideration of the principles recognized by the Greeks in the assignment of certain characteristic sets of mouldings to certain architectural members, and also to that of their application of precise proportions in constituting sets of mouldings. Space may at least be allowed for an illustration of the latter point.

Let us examine the base of the Ionic column of the propylæa of which we have exact measurements in Penrose's "*Athenian Architecture.*" We see at once that it can consist of two contrasted members, a channelled torus surmounted in profile by a cavetto, the apophyge of the shaft, and a bolder plain torus below surmounted by a scotia.

The height of the upper paired member is to that of the lower as 5 to 4 precisely. The lower system is then divided between torus and scotia by the same proportion but in reverse order; the scotia being as 4 to the 5 of the torus below it.

The upper torus is subordinated in the lower by the proportion of 7 to 8 with absolute coincidence.

The height of the base from which these subdivisions start is derived from half the lower diameter of the shaft.

W. WATKISS LLOYD.

OLD COLONIAL WORK OF VIRGINIA AND MARYLAND.[1] — V.

SHIRLEY.

THE old manor-house of Shirley stands upon the brow of a low bluff on the north shore of the James, just opposite the mouth of the Appomattox. Westward, across the river, is the ancient settlement of Bermuda Hundred.

The steamers flying to and from Richmond will put in at Shirley landing, or one may reach the old places by way of Petersburg, coming up from the town to City Point by rail and depending on the somewhat uncertain chance of finding a boatman to put one across to Shirley. The row across from the point is charming on a bright morning, the river flowing in a broad and beautiful reach by Shirley. Your wherry, running in under the tree-crowned, grassy bluff which Shirley crowns, soon grates her keel upon a little pebbly beach. In a moment you have scaled this slope and stand upon the lawn, the noble front of the ancient manor-house before you: a great square house, with walls of dull red brick, two stories high and crowned by a tall, high-pitched mansard roof.

A stately portico, also in two stories, pleasantly shades the entrance doors and the middle part of the house from the too-fervid summer suns. Beneath this shelter is a broad stone platform to which four stone steps, extending the full width of the portico, lead

up from the lawn. There are four round columns of wood, generous of girth and turned with an evident and graceful entasis. The base of each column is fluted for about eight inches above a square stone plinth. The capitals are quite flat. The neck is encircled by a delicate astragal. The abacus is square, with slight thickness lessened in effect by a cyma on the under edge.

A pilaster finishes against the wall on either side, and between the two the whole wall beneath the portico is covered with hard white plaster. The surface of the ceiling is broken into broad panellings.

[1] Continued from page 124, No. 716.

A deep entablature, consisting of narrow architrave, broad plain frieze, and boldly projecting cornice, rests upon the columns.

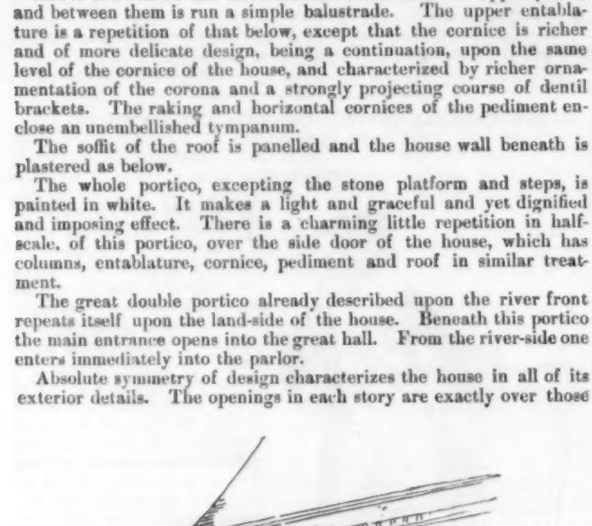
Above are reared the more slender columns of the upper porch, and between them is run a simple balustrade. The upper entablature is a repetition of that below, except that the cornice is richer and of more delicate design, being a continuation, upon the same level of the cornice of the house, and characterized by richer ornamentation of the corona and a strongly projecting course of dentil brackets. The raking and horizontal cornices of the pediment enclose an unembellished tympanum.

The soffit of the roof is panelled and the house wall beneath is plastered as below.

The whole portico, excepting the stone platform and steps, is painted in white. It makes a light and graceful and yet dignified and imposing effect. There is a charming little repetition in half-scale, of this portico, over the side door of the house, which has columns, entablature, cornice, pediment and roof in similar treatment.

The great double portico already described upon the river front repeats itself upon the land-side of the house. Beneath this portico the main entrance opens into the great hall. From the river-side one enters immediately into the parlor.

Absolute symmetry of design characterizes the house in all of its exterior details. The openings in each story are exactly over those



West Porch of Shirley.

below. Even the five tall dormers on the front and rear slopes of the mansard, flanked by the four exactly like them on either end, correspond in width and height with the size of doors and windows in the principal stories.

The walls are carried up to the eaves, two stories from the ground, in small English brick, laid in Flemish bond without break other than the offset of the thicker wall below the water-table and a band, slightly projected and several courses deep, carried around the house at the second-floor level.

The color is a very rich dull red. The windows are broad and high, and have double sashes set in heavy white frames and divided into twenty panes to each window. They have modern outside slat-blinds folded back against the wall, and are provided on the inside with the old-fashioned solid-panelled shutters folding in the depth of the generous reveal, the frames, set well to the outside leaving the thickness of the solid walls within.

Flat brick arches crown the openings. The lines of the old mansard roof are not unpleasing. The attic has a good height, the foot of the rafters is curved outward at the eaves to make a broad overhang, and the dormers rear high-peaked gables over all.

The chimneys cut out of the upper roof and rear a story's height above the edge in two massive oblong stacks. Between the two the roof-peak flowers in a great acorn-shaped wooden finial.

The solid, square bulk of the old manor-house wears a stately, high-born air, standing in the midst of the green lawn, among the great trees, which stretch out spreading boughs high in air above the roof-tree.

On the east side of the lawn, behind a fine old box hedge, is an old-fashioned garden, where vegetables, fruits and flowers mingle in democratic good fellowship — a long garden, where one gets lovely vistas down under the hanging boughs of the peach-trees, where there are a dial, an arbor, and all sorts of delightful things of ancient flavor.

In a new book of Mr. Besant's, "*For Faith and Freedom*," he paints an old English garden, of which the Shirley garden is almost a counterpart:

"In the gardens of the manor-house the sunflowers and the hollyhocks were at their tallest and best; the yellow roses on the wall were still in clusters; the sweet peas hung with tangles of vine and flowers upon their stalks; the bachelor's buttons, the sweet mignonette, the nasturtium, the gillyflowers and stocks, the sweet Williams and the pansies, opened their late summer blossoms to the hot sun among the lavender, thyme, parsley, sage, feverfew and vervain of my lady's garden."

On the north side of the lawn are two brick houses of two stories each in height, containing the kitchen, scullery and other offices, and the quarters of the domestics.

Beyond these a fence shuts off the great, roomy barn-yard, where there are the long, rambling brick stables, the dairy and tool house of brick, queer old log tobacco-houses, and barns and corn-cribs.

In a field beyond the barn-yard enclosure is a charming little columbarium, or dove-cote, a round tower built of brick and crowned by a steep, cone-shaped, shingled roof, ending in an open lantern or belfry-like turret, in and out of which pigeons in white and blue and bronze are flying and flashing in the bright sunshine.

Within the barn-yard droves of turkeys are stepping about, regiments of white geese hissing as they march; files of ducks in bravely glistening green and gold waddling hither and yon; clucking hens leading their fluffy broods in quest of the unwary worm or chance scatterings of grain; strutting cocks of gallant mien lording it grandly over cackling, chattering, idly wandering wives; here and there a lazy, lop-eared hound stretched asleep where the sun shines warm; and down at the stables the boys, with cheery song and laugh, grooming their horses or washing down the great state-coach.

Beyond the farm premises stretches landward the farm road, under a long avenue of old locusts, across the level fields, through many gates and up a hill, about half a mile from the manor-house, on the top of which is a row of steep-roofed board houses, the quarters of the field-hands in the old happy times before the war.

Shirley differs in some essential points from the other great colonial residences of tide-water James. The plan of the house is, in fact, very like that of some of the ancient *manoirs* of mediæval France. The hall does not bisect the house from front to rear, as usual in houses of the same period, but occupies the whole north-west quarter of the first floor. It is a spacious and handsome hall, and gives an air of baronial grandeur to the house. The principal entrance is beneath the portico on the land-side by a wide single door.

On entering, one has the length of the great hall on his right, with the rich soffit of the stairway overhead. On the left, a broad door opens through the panelled wall into the library or morning-room, a very charming apartment, whose walls are wainscoted from floor to ceiling in panels of considerable size.

Opposite the hall-door is the entrance to the parlor, and opposite this another wide doorway gives upon the portico on the river-side of the house.

A handsome broad stairway, starting in the right-hand corner of the hall, by a door opening out upon the little west porch already described, with three steps up to a first landing, mounts with a luxuriously easy ascent to the second platform, whence it swings out from the wall across the hall until it meets the second-floor level.

The side of the first flight is enclosed by a panelled partition, and a door under the landing opens on the cellar-stairs. The ends of the treads project beyond the partition, and are effectively moulded on the under-side. The exposed soffit of the second run presents, also, a rich ornamentation worthy of note. The bottom step is broader than the rest, and over its rounded outer end the railing swings out in a spiral twist, forming a handsome newel. The rail is carried up with graceful ramps and knees, and is supported on richly-turned balusters, set three to a tread.

As one stands at the foot and looks up through the well, the handsome stairway, springing gracefully from floor to landing, thence to floors above, has a grandly generous and dignified effect. The walls are panelled for their full height above the dado in large panels of white painted wood, as, indeed, is the case in the four rooms on the first floor.

Opposite the foot of the stairs is a door opening into the dining-room, a cheery, bright room in the southeast angle of the house, on the river-side, lighted by four large windows, two of which look upon the western lawn, and two toward the river. Upon the panelled walls of this room hang many interesting old portraits of the famous ones of the race. Among these is a great, full life-size portrait of

George Washington by the painter, Peale, which quite fills up one corner of the room. Washington was not, however, of the blood of the Carters. The open door offers a glimpse down the length of the great parlor toward the southeast corner, in which looms a tall old mahogany clock of Liverpool make, on either side of which hangs the portrait, done by Sir Godfrey Kneller, of an eighteenth-century squire and his lady, who were, if I remember aright, John Carter and his wife, the first Carters of Shirley.

The south wall of the drawing-room has three openings, set in deep embrasures in the massive wall, two windows and a door, the latter giving upon the river portico; and there are two windows in the east wall, from which one looks across the lawn to the box-hedged garden, or has a glimpse through the trees of the broad river glistening beyond.

The drawing-room has half the width of the whole house. A wide chimney-breast projects into the room from the partition or north wall, and there is a deep, generous fireplace, about four feet high by five feet wide. The facings of the fireplace are of white marble, enclosed in a narrow wood frame boldly carved with the somewhat trite egg-and-tongue motive. Above the frame is set a frieze of convex form richly and delicately carved in a conventionalized design showing flowers bound with crossed ribbons. Above the frieze a narrow mantel-shelf is brought out in well-proportioned members enriched by refined mouldings. The panel covering the breast over the mantel is set around with a deep and richly-carved frame, probably designed to enclose a great mirror.

The three portraits over the mantel are done in crayons by Ste. Memin, a French artist who came to this country about 1789, and who did, likewise, one of the numerous portraits of General Washington. In the angle of wall and ceiling is set a deep cornice, consisting of an architrave marked with light horizontal lines, a projecting fillet, a swelling frieze, a hollow moulding ornamented with delicate, reed-like, horizontal flutings, a course of bracket-dentils, and over all a boldly-projecting corona.

Close study of detail is everywhere observable in the finish of this beautiful room. The base, or washboard, is painted black, while all above is in white of an antique ivory tone. Above the base is set a moulding two inches deep, composed of a number of delicate members. The dado presents a plain, unbroken surface, and is capped by a chair-board four inches deep, moulded in pleasing form. In each of the great panels above hangs the portrait of some fair châtelaine of Shirley, usually displaying a generous expanse of snowy neck, or of burly squires resplendent in curling wigs and falling laces.

Over the door into the dining-room is a broken pediment, much affected in that period, the raking cornices of which are run in graceful curves, ending in a spiral twist and elaborate rosettes. Between them is carved a pineapple in high relief.

On the dining-room side a classic urn stands within the ends of the broken pediment. Glazed transoms of graceful design are set over the outer doors, and over that from the hall into the drawing-room. The massive doors are made in six raised and bevelled panels, with broad styles and rails, and have great rim-locks, drop-handles and other furniture of polished brass. Two centuries of wear and tear had not impaired the perfect condition of the old woodwork, when, in an evil day, the ever deadly, destroying furnace was set up in the cellar, and when it had poured its parching breath for scarce as many months through the stately rooms of the old mansion, great rents began to appear in the large panels, built up of many pieces carefully joined at the edges, and horizontal seams yawned in the broad, plain surface of the dado, mitres becoming unpleasantly obvious here and there, and mouldings shrinking away from their beds.

Shirley was probably so named in honor of the wife of Lord De la Warre, a daughter of Sir Thomas Shirley, of Whiston. Its history is almost as long as that of the colony.

The place was founded by Sir Thomas Dale, High-marshal of Virginia, who came over in 1611 to succeed Lord De la Warre, and who, after establishing his city of Henricus, at Dutch Gap, or Varina, as it was then called, and set it growing behind its palisades, laid out the settlements of Bermuda Hundred and of Shirley Hundred, on the opposite shore of the James. His lordship appears to have been a governor of immense force and untiring energy. He soon rid the colony of the hordes of dissipated idlers who had well-nigh wrought its ruin before his coming. He set them to work, every man of them, and when a number of malcontents conspired together to resist his authority, he arrested and put to death the ringleaders of them by the pleasantly varied methods of "hanging, shooting, breaking on the wheel, and the like," while one pernicious fellow, presumably of doubtful veracity, "had a bodkin thrust through his tongue, and was chained to a tree until he perished."

By means of such novel and convincing arguments did the stern old founder of Shirley persuade the adventurers that he meant to be obeyed, and he very speedily brought the colony into a better state.

In the terrible Indian massacre of 1622 Shirley seems to have escaped without loss.

Colonel Edward Hill, who built his house at Shirley in 1640, was elected speaker of the House of Burgesses in 1654, and two years later lead a force of Virginians with one hundred friendly Indians of the Pamunkey tribe, against seven hundred hostile Riecabeerians who had descended the James from their hunting-grounds beyond the Blue Ridge, and encamped near Richmond, greatly alarming the settlers.

Colonel Hill fell upon their camp and fought a great battle, but he was routed and fled in great disorder, leaving among the dead upon the field his faithful ally, Totapotomoi, Chief of the Pamunkeys.

Twenty years later, in Bacon's Assembly, the widow of the fallen brave appeared before the Burgesses to answer, as "Queen of the Pamunkeys," a demand upon her tribe for fighting men to help the colonists against the threatening redskins. She was accompanied by her stripling son, "whose father was said to be an English colonel," and dressed in the picturesque splendor of the savage she bore herself with royal mien, replying to the questions of the Burgesses in "a high, shrill voice, and with vehement passion — Totapotomoi Chepiak — Totapotomoi is dead." Her words were interpreted to the assembly by Colonel Hill, of Shirley, the son of the hero of the Riecabecrian fight.

Shirley passed into the hands of the Carters with the marriage of John Carter, a son of "King Carter of Corotoman" to Elizabeth Hill, who inherited her father's estate and manor-house of Shirley.

A sketch of the great genealogical tree which, from the parent stem at Shirley, has shot out branches covering the whole of Tidewater, Virginia, is not to be attempted in a paper of limited scope. The family boasts a vast connection, indefinitely extended by intermarriages among the great families of the neighboring boroughs and parishes. The age of the manor-house of Shirley has been variously stated, and it has been assigned to a date as early as the middle of the seventeenth century, though it is far more probable and indeed quite evident, that the old house does not antedate the first quarter of the eighteenth century.

A. B. BIBB.

COMMUNICATIONS.

[*The editors cannot pay attention to demands of correspondents who forget to give their names and addresses as guaranty of good faith; nor do they hold themselves responsible for opinions expressed by their correspondents.*]

THE PHILOSOPHY OF THE ATTEMPT ON CENTRAL PARK.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — In the *American Architect*, as a leading organ of constructive art, I ask room here to record the view that the proposition to use any part of the pretty garden of the people in New York, known as the Central Park, for any temporary or permanent use connected with an exhibition, or for any other use injurious to the present one (as if any other use of the space *could* be as good as the present one), is one of the most striking of recent evidences of the hopeless vulgarity of the human race. Hopeless, for we find instances of magnanimity among unenlightened and savage peoples, and even in animals. Yet magnanimity is based on an exalted perception of that wherein is the residence of values. The lack of that perception inspires those who, as in this instance, wish, whether they succeed or not, to destroy a greater for a lesser good, and has inspired those who, through selfishness, stupidity or from whatever motive, have destroyed art values throughout history. But for this we should *possess* the Seven Wonders of the world, instead of only knowing but their names; we should possess the Alexandrian Library, the Parthenon in perfection; indeed, all that is most worthy of admiration in man's past. For one instance where, as in the loss of the Pink Terraces of New Zealand in the earthquake of 1887, Nature has robbed us of beauty, we have lost a thousand through the vulgarity of man. But though men will, like the ourang-outang and other simians, always have an itching to destroy what he cannot replace by anything better, which is the lowest form of the constructive instinct, yet the estimate of individual men as to the use of destroying will, little by little, as civilization advances, be less and less respected. Each man will be compelled to limit the manifestations of his instincts more and more to instances where he can do no harm to others; and the automaton of the future will be no more permitted to destroy for a generation nearly half of the pleasure-garden and health-resort of a vast population than we should now permit Herod to kill off the first-born in every house in order to keep himself on the throne. I have no wish to blame these gentlemen in New York or to blame Herod — both are products of their time — but to point out what is (in my view, and, since spontaneous, probably in the view of many others) the philosophic explanation of the conduct of both alike, and of all destroyers of objects of beauty.

AN ARCHITECT.

THE RICHARDSON BIOGRAPHY.

BUFFALO, N. Y., September 16, 1889.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — Will you kindly inform me through the columns of your paper whether the work on the late H. H. Richardson, by Mrs. Schuyler Van Rensselaer — Houghton, Mifflin & Co., — publishers,

has attained the fabulous value of $200.00 per copy? I have been so informed, and wish to learn from a reliable source, if true.

Respectfully, Ulysses G. Orr.

[The book can still be obtained of the publishers at the original price of publication, $20.00.—Eds. American Architect.]

NOTES & CLIPPINGS

The Canal of Joseph.—How many of the engineering works of the nineteenth century will there be in existence in the year 6000? Very few, we fear, and still less those that will continue in the far-off age to serve a useful purpose. Yet there is, at least, one great undertaking conceived and executed by an engineer, which, during the space of 4,000 years, has never ceased its office, on which the life of a fertile province absolutely depends to-day. We refer to the Bahr Joussuf—the canal of Joseph—built, according to tradition, by the son of Jacob, and which constitutes not the least of the many blessings he conferred on Egypt during the years of his prosperous rule. This canal took its rise from the Nile at Asiut, and ran nearly parallel with it for nearly 250 miles, creeping along under the western cliffs of the Nile valley, with many a bend and winding, until at length it gained an eminence, as compared with the river-bed, which enabled it to turn westward through a narrow pass and enter a district which was otherwise shut off from the fertilizing floods on which all vegetation in Egypt depends. The northern end stood seventeen feet higher than low Nile, while at the southern end it was at an equal elevation with the river. Through this cut ran a perennial stream, which watered a province named the Fayoum, endowing it with fertility and supporting a large population. In the time of the annual flood a great part of the canal was under water, and then the river's current would rush in a more direct course into the pass, carrying with it the rich silt which takes the place of manure, and keeps the soil in a state of constant productiveness. And this, with the exception of the tradition that Joseph built it, can be verified to-day, and it is not mere supposition or rumor. Until eight years ago, it was firmly believed that the design has always been limited to an irrigation scheme larger, no doubt, than that now in operation, as shown by the traces of abandoned canals and by the slow aggregation of waste-water which had accumulated in the Birket el Querun, but still essentially the same in character. Many accounts have been written by Greek and Roman historians, such as Herodotus, Strabo, Mutianus and Pliny, and repeated in monkish legends or portrayed on the maps of the Middle Ages, which agreed with the folklore of the district. These tales explained that the canal dug by the ancient Israelite served to carry the surplus water of the Nile into an extensive lake lying south of the Fayoum, and so large that it not only modified the climate, tempering the arid winds of the desert, and converting them into the balmy airs which nourished the vines and the olives into a fulness and fragrance unknown in any part of the country, but also added to the food-supply of the land such immense quantities of fish that the royal prerogative of the right of piscary at the great weir was valued at $250,000 annually. This lake was said to be 450 miles round, and to be navigated by a fleet of vessels, while the whole circumference was the scene of industry and prosperity.—*Engineering.*

The Value of Covering Steam-pipes.—In the *Michigan Engineers' Annual*, which is the report of the proceedings of the Michigan Engineering Society, of January, 1889, Prof. M. E. Cooley, M. E., of Ann Arbor, gives the following experience on the value of covering steam-pipes: "The benefits of covering steam-pipes to prevent radiation, are strikingly illustrated by the following example: The Thomson-Houston Electric-Light Plant, in Ann Arbor, has about 60 feet of 7-inch pipe, connecting the boiler with the engines, and two large steam-drums above the boilers. In March, 1887, the steam at the far end of this pipe was tested to determine the amount of entrained water, the pipes and drums at the time being uncovered. An average of nine experiments gave 31.01 per cent of moisture. In June of the same year, after the pipes were covered with magnesia sectional coverings, the quality of the steam was again tested, the average of five experiments giving 3.61 per cent moisture. The tests were made by the same men, from the same connections, and in the same manner. The pipes and steam-drums in March were subjected to a draught, which, of course, aided the condensation. Enough water passed into the cylinders to retard the engines, producing a disagreeable noise. In June, the weather was warmer, and the pipes and steam drums were well protected; the quality of steam at the boilers was tested in June, and showed about 3 per cent of moisture. Assuming that 100 I. H. P. were being developed at the time, and that each horse-power required 30 pounds of steam per hour, we would need 3,000 pounds of steam. If the steam is assumed to have 25 per cent entrained water, due to condensation in the pipes and connections, then 4,000 pounds steam will need to be produced in the boilers, or 1,000 pounds more than necessary. To produce this steam will require about 125 pounds of good coal per hour, or 1,000 pounds per day of eight hours. One-half ton per day, at $3 per ton, for 300 days, equals $450, which at 6 per cent, pays the interest on $7,500. The actual cost of the covering, put on complete, probably did not exceed $150.

The Largest Draw-Bridge.—The Shore Line Railway bridge at New London, the largest swing-span draw-bridge in the world, is now in position. It was built parallel to the shore along the fender pier, so as not to obstruct navigation, and was swung into place half an hour before sunset Saturday afternoon. It is of solid steel, weighs nearly 2,500,000 pounds, and its connecting parts, when the bridge was swung into position, shot into the mortises of the bridge proper with absolute precision. This was a great relief for the anxious engineers. Some of the highest engineering skill ever employed in bridge-building has been used in the construction of this bridge, the situation involving peculiar difficulties. In some places, 56 feet of water and 80 feet of mud were found where the piers must be set. There great timber curbs were constructed and sunk to the total depth of 137 feet. After scooping out the interior mud, the curbs were driven full of piles. These, cut off at a level midway in the curbs, were bound solidly together by filling the spaces with concrete. On this rock-like basis the masonry of the pier was built up. The centre pier is an immense structure 71 feet square. It is flanked on either side by spans of 310 feet, and there are two other spans at either side of the river of 150 feet each. The unusual length of draw was required by the United States Government that there should be no obstruction to the passage of the naval fleet to the Thames naval station farther up the river. This great bridge, 1,422 feet long, crosses the Pequot River (imitatively named by the first settlers the Thames, while they, quite as foolishly, named Pequot New London) from a point at the terminus of the Yale-Harvard regatta course at Winthrop's Point, at the upper part of the town.—*The Iron Age.*

TRADE SURVEYS

If the business plans and purposes under consideration among a great majority of the business men of the country could be known, it would appear that the chief question now under consideration is, Shall a general expansion of production be entered upon? The temptation to expand is most inviting, but the dangers which experience show are necessarily involved to check enterprise, or rather hold in check those managers who are almost inclined to take the risk. The manufacturing interests know that an accumulation of stocks beyond a certain point means not only a drop in prices of from 5 to 10 per cent, with a corresponding depreciation in many other directions, but that it means restricted buying, withdrawn enterprise and enterprises, lowering wages and general instability, in addition to financial complications. To maintain an even balance between production and actual consumptive requirements is the problem which practical economists wish to see the solution for. It is encouraging to note how much self-restraint is exercised among competing producers all over the world, and how much good use is being made of the dearly-bought experience of past decades. That an increased output will be made this winter none need be told who watch behind the scenes. The fact is that a general advance in prices is threatened, so many assert, simply because there are not sufficient manufactured products on hand to cover a sudden spurt of demand. Right here is an error which the commercial mind is most apt to make. True commercial wisdom demands no accumulation, and the tendency of the day and hour is decidedly in that direction. The growth of trade organizations of all kinds is also contributing in that direction. The business world is learning to gauge its effort to meet current requirements, but the importance of the lesson is slowly learned. The anticipation of wants stimulates productive capacity artificially, and encourages capital to enter upon a work where its service is not needed. Besides, the old method of manufacturing until a gorge of productions arrested trade, creates alternative abundance and scarcity of capital, higher rates of interest and narrower margins to manufacturers. The present trade condition could be strengthened by the elimination of some elements of cost, such as higher than necessary cost of raw material, and a higher cost for money or credit than an enlightened financial management would tolerate. There are quite a number of barnacles that some day will be more clearly recognized than now, but they will not be generally observed until there is a corresponding intelligence and capacity to remove them. October opens with abundant promise of prosperity, especially to the little people who are operating with a few thousand dollars and a few workmen. There has not been such a favorable opportunity for years for starters in commercial life or in manufacturing, but the opportunity is offered only to the limited number of practical men who have become familiar with the most improved methods for supplying the wants of man. The iron and steel makers are barely able to cover pressing demands. Crude iron is advancing in Western markets. Last week railroad-builders bought, or contracted, for 75,000 tons of steel rails.

Buyers of billets, slabs, etc., are hurrying in orders for large blocks of material for winter delivery. In some portions of the country a car famine prevails, and it is estimated that before December 1 orders for 20,000 cars will be placed, which means a demand for 600,000 tons of iron and steel products. The demand for merchant iron and steel for all purposes into which such products enter is increasing week by week, but prices for the most part remain uniform. The lumber manufacturers report the result of the year's business thus far as fair, but prices are weak at present, because of the willingness of large holders to unload for cash. The makers of shop and mill machinery, especially in the Western States, have more work in sight than for years; but, in spite of this, there is only a slow expansion of machinery-making capacity. Tool and implement makers are preparing to meet next year's demands, which, it is thought, will be very heavy. The railroad companies are being crowded with traffic in agricultural, mineral and lumber sections, and the movements of general merchandise are very large. The boot and shoe manufacturing interests, the paper-making interests, the textile-goods interests, and a host of other great interests are all looking forward to a greater demand next spring than has ever been enjoyed, but everything points to only moderate profits. Textile manufacturers hope to harmonize all interests in contemplated tariff adjustments. Wool-growers are preparing to contest for the mastery, as against foreign interests. Coal-miners are opening-up enough new territory to add ten million tons per year to our coal-supply. New banks are being started in the West, and money-lenders are making connections in the newer sections of the country that promise much aid to safe borrowers. Farm mortgage schemes are attracting public attention, and possibly some method of governmental supervision will be devised to secure protection to investors. The West is growing more and more financially independent of Eastern assistance, but the multiplying opportunities in these new localities will continue for years to absorb Eastern savings under protective legislation. The evils of existing systems of lending or investing money will be remedied and the outflow will continue, to the mutual advantage of both sections.

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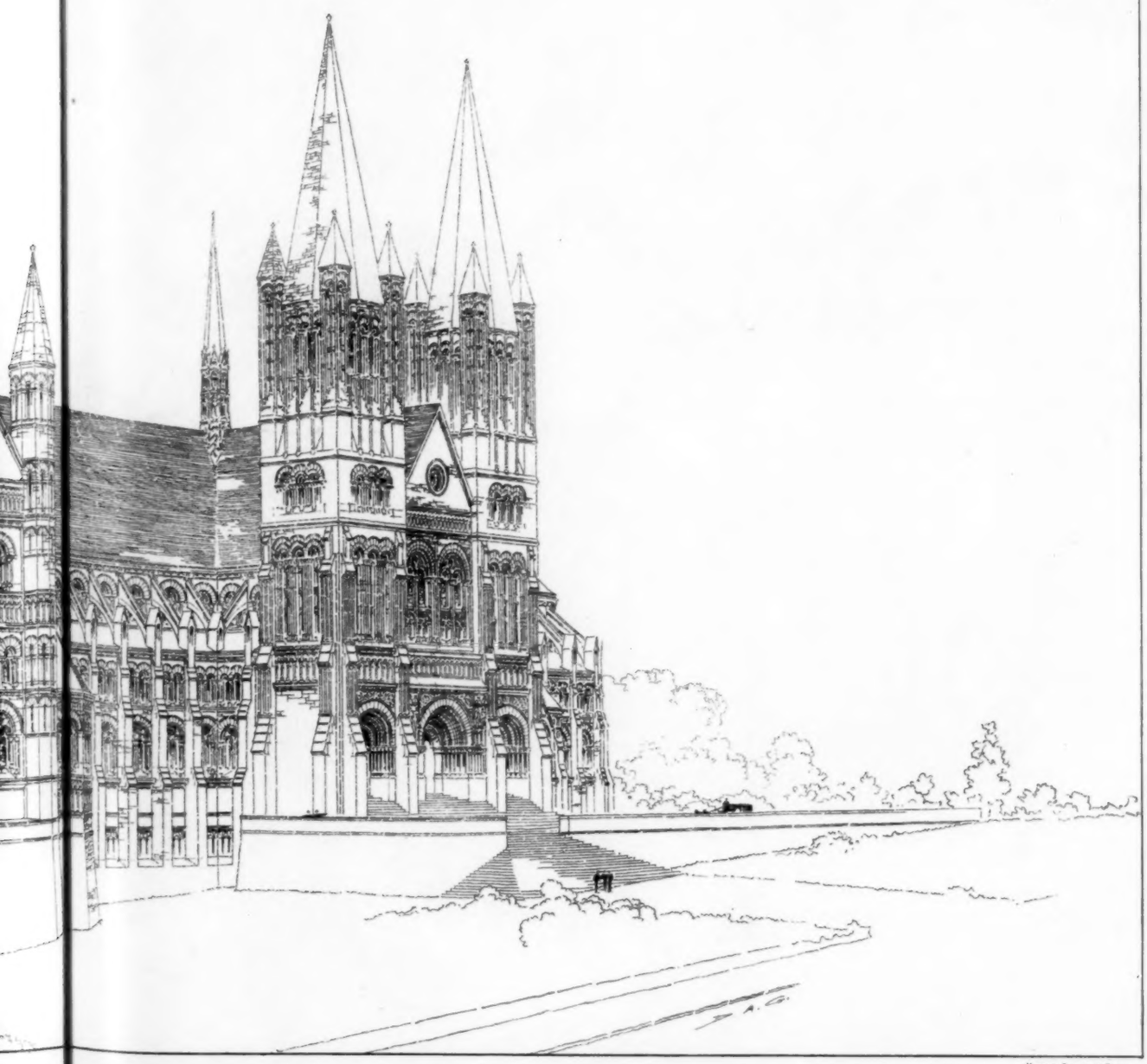

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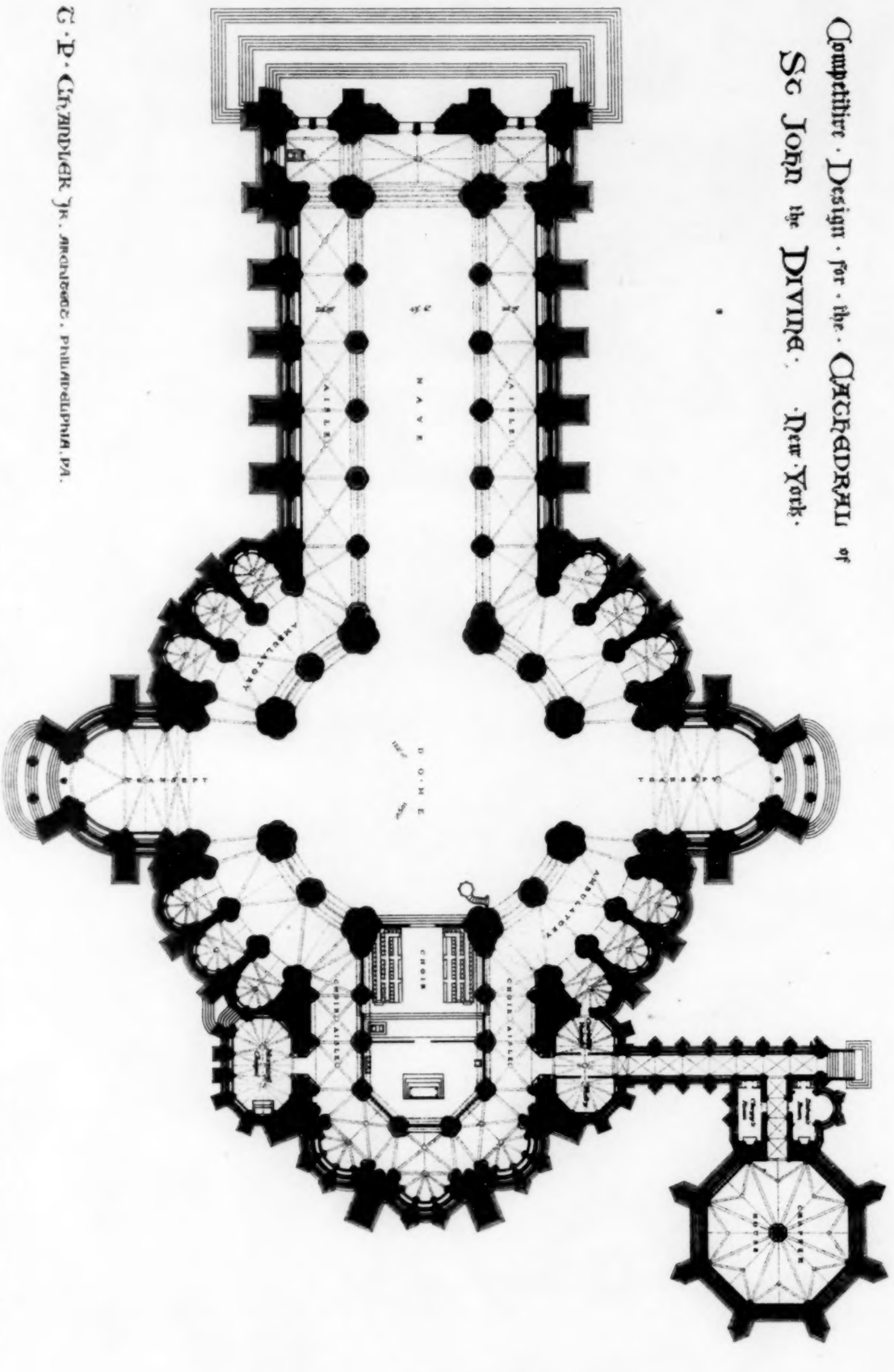

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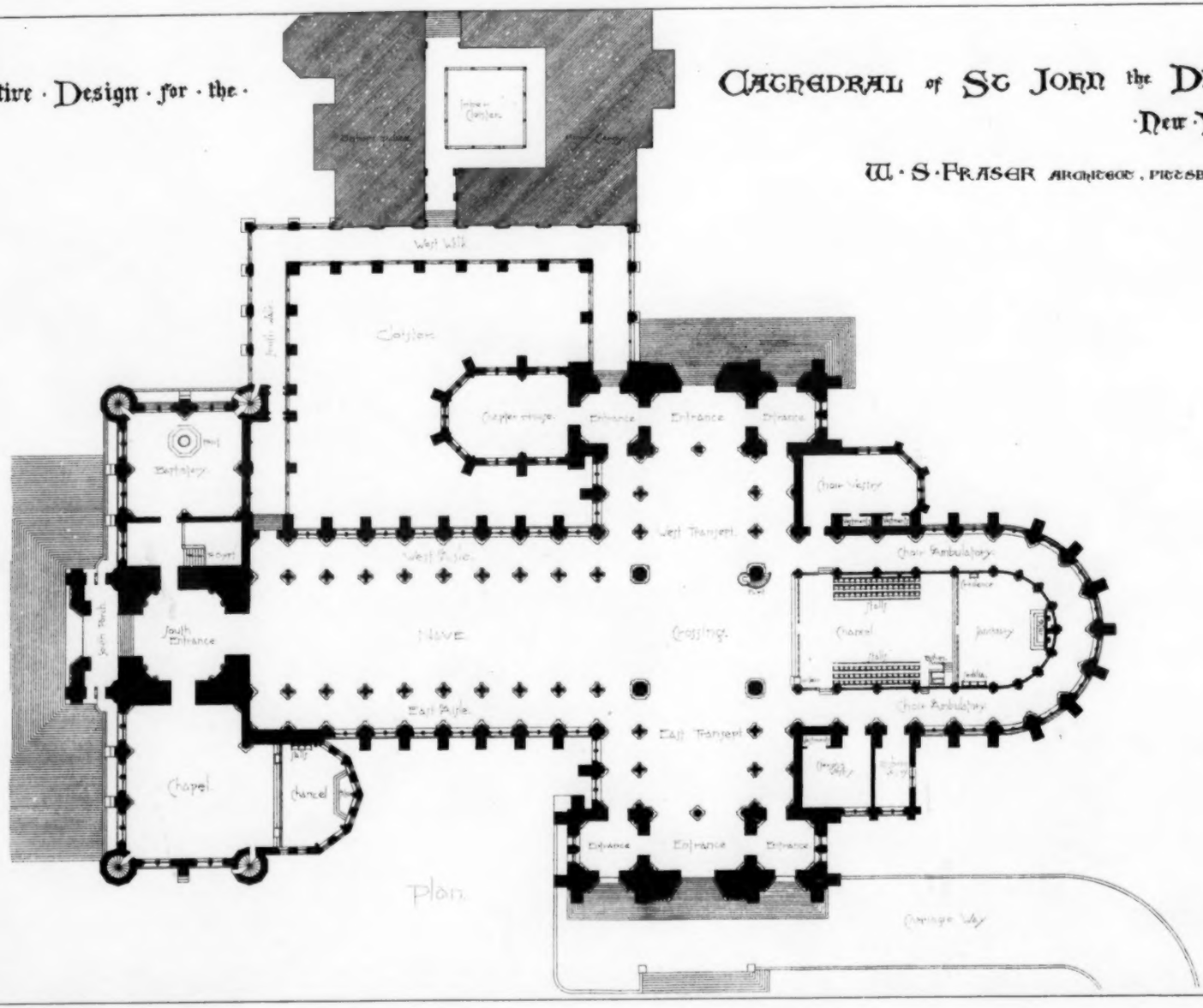

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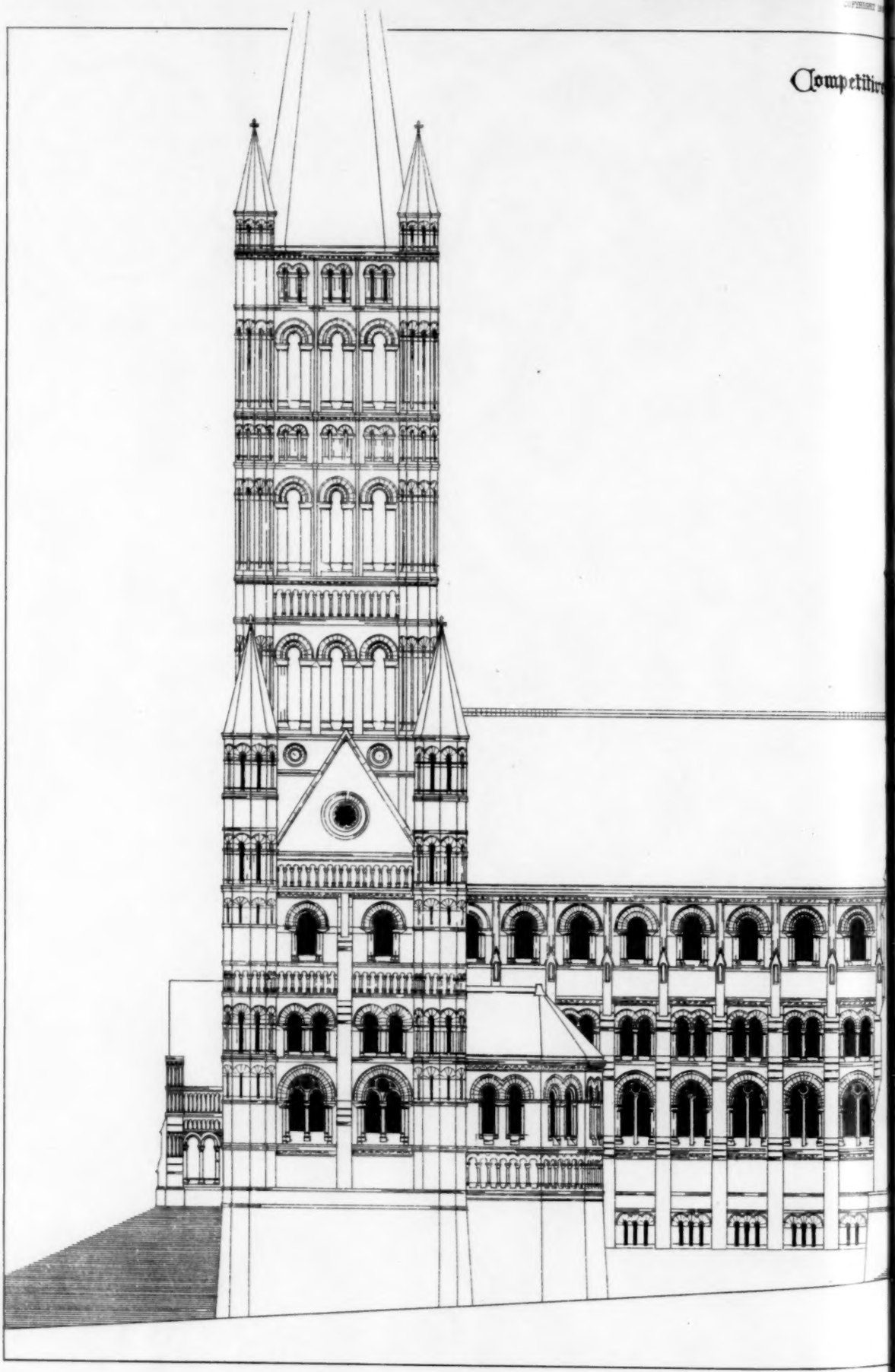

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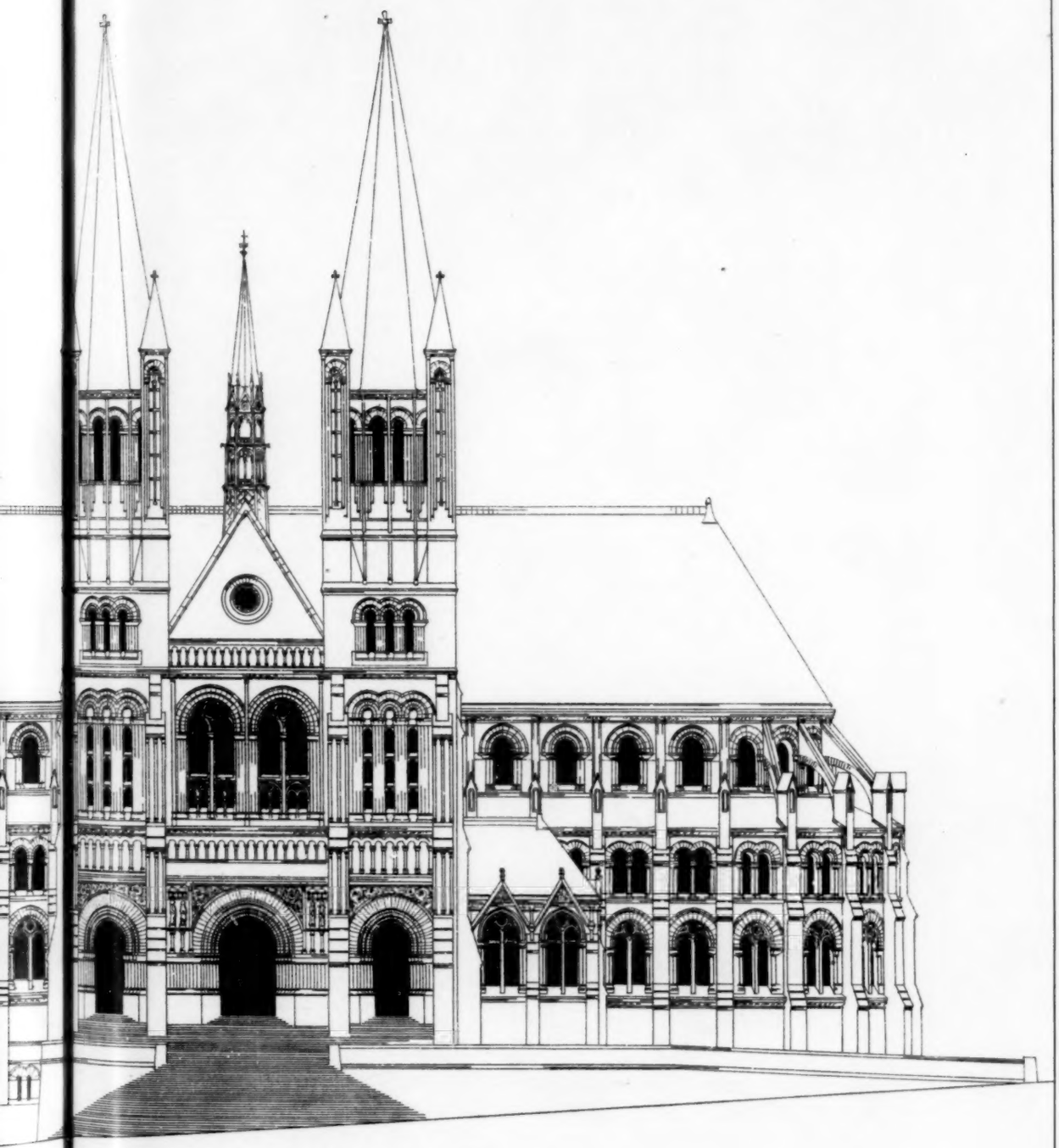

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